School Shop

vol. XIII no. 6

FEBRUARY 1954

Industrial Arts and the Slow Learner
by Bernard Blond

Welded Boat Anchor
by Alden D. Groff

Let's Make a Matchplate
by H. F. Dietrich

Modern Illustration Board
by Emerson E. Neuthardt

Cover story: A class in metalworking in the Abraham Lincoln High School, Philadelphia, Pa., watches a demonstration in silversmithing by a professional as part of a program to utilize community resources in the school. Note the beautiful examples of craftsmanship on the bench.

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School Shop TALK

COMMENTS ON ISSUES FACING INDUSTRIAL EDUCATION

Needed—Industrial-Arts Teachers

(A Guest Editorial)

A recent release by the American Association of Collegiate Registrars and Admissions Officers points out that an estimated million more children were being born each year from 1946 to 1952 than the average number born during the preceding ten years. These data indicate that in 12 years each grade of the school system will have been increased by one million and the total increase will be approximately 12 million more in 1964 than in 1952.

During the past few years, the shortage of elementary-school teachers has been critical and a number of devices have been used to encourage people to obtain sufficient training to qualify for temporary certification at this level. But the demand has not been met.

It is only a matter of applying simple arithmetic to the data given above to show that the need for adequately prepared teachers at the secondary level will shortly be extremely acute. Fewer people are currently enrolled in college courses preparing to teach at the secondary level than previously.

When one examines the situation in the field of industrial arts he finds that a surplus which existed in 1949 and 1950 has disappeared and many states report a decided shortage. Although college enrolments show an increase, a proportional increase is not reflected in the enrolment in the areas preparing industrial-arts teachers.

The problem is: how do we get more men interested in teaching industrial arts? It is a matter of recruitment and cannot be done by the colleges alone. The assistance of the industrial-arts teachers in the field is needed. To this end the writer would suggest that each industrial-arts teacher put forth special effort to interest top-notch juniors and seniors in teaching industrial arts as a profession.

Unless teachers in the field assume this responsibility and begin encouraging high-school graduates to enter college for preparation as teachers, we can expect to see standards for certification reduced to such levels that years will be required to regain the ground lost. Each teacher of industrial arts should immediately begin to attack this problem seriously if the situation is to be met effectively.—*Robert W. Haws, Assistant Professor of Education, Ohio State University, Columbus.*

Less Pianissimo

A sad commentary on the relative values of the military and the educational as envisioned by our federal government is discernible at the national meetings in our field.

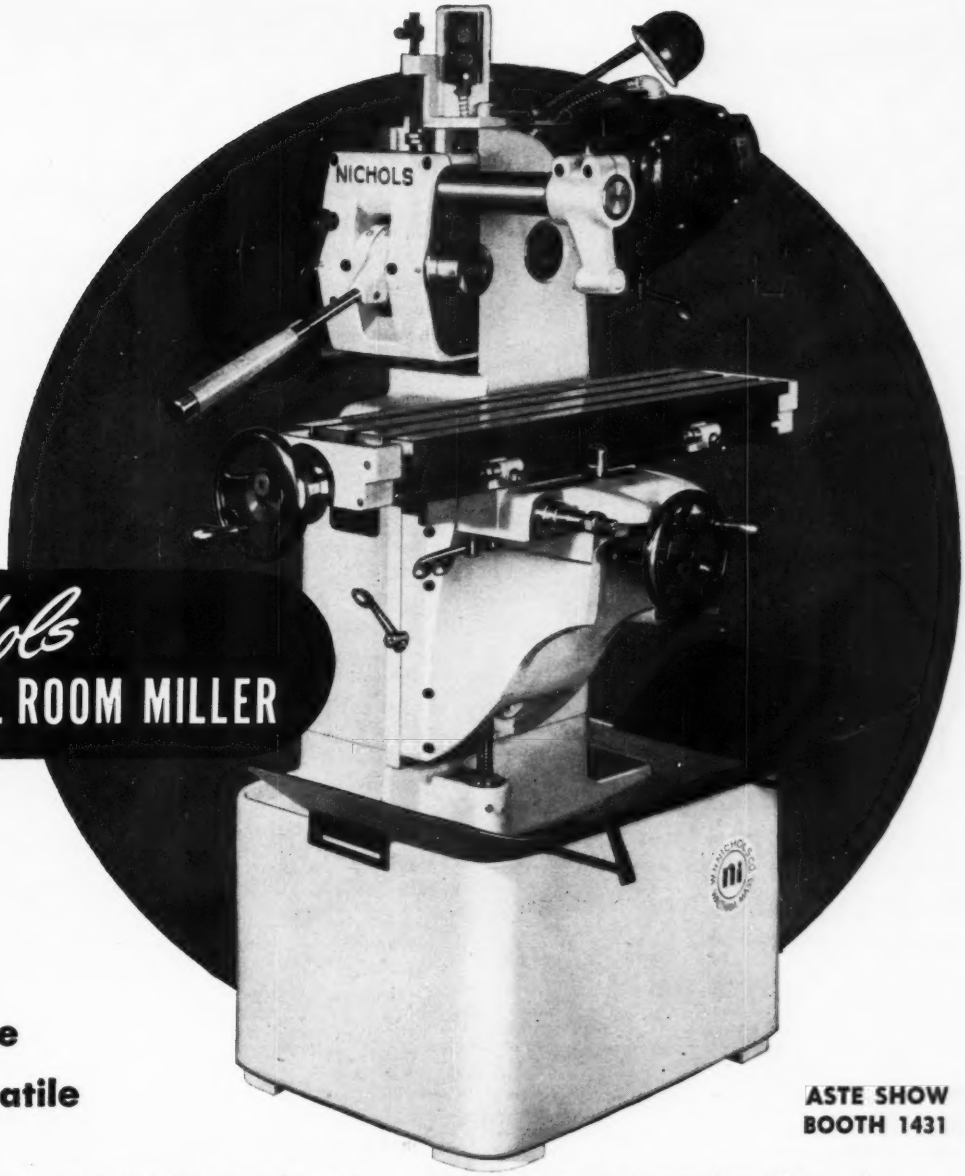
Budgetary limitations on the U.S. Office of Education are so stringent that only a few of the staff members who should attend national professional meetings are able to do so. At these same meetings there are always in attendance large numbers of military personnel who man the booths operated by the various military branches in order to present an attractive and realistic picture of the future in the armed services for students now attending school.

We did not make an accurate head count of the various members of the Air Force, Army, and Navy who were in attendance at the Chicago AVA meeting, but we could not help but feel that it was in excess of the number of Office of Education people who were there. Most certainly there was a larger amount spent on the armed services activities at the convention when the cost of booth space, personnel, and printed and other materials in evidence is considered.

No doubt the armed services have good and important reasons for being adequately represented at these meetings. We have no quarrel on that score.

We do question the kind of budgetary restrictions that make it impossible for Office of Education personnel who are supposed to represent leadership in the field to put in an appearance at the very meetings where that leadership can be of the most service to the profession.

Congress plays the financial pipes and the federal agencies have to dance to the proper tune. The Office of Education is strictly in a minor key. If education of our youngsters is an important responsibility of the government (and who can say it is not?) then more forte and less pianissimo is in order.—*L.W.P.*



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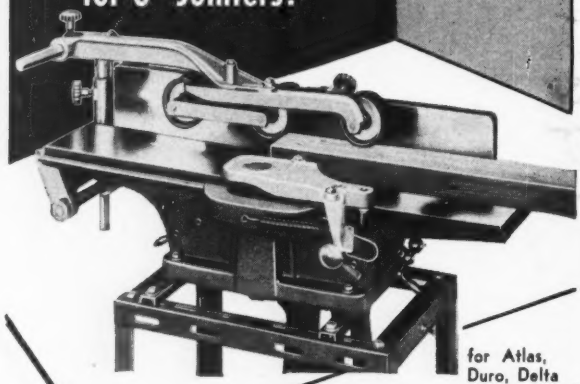

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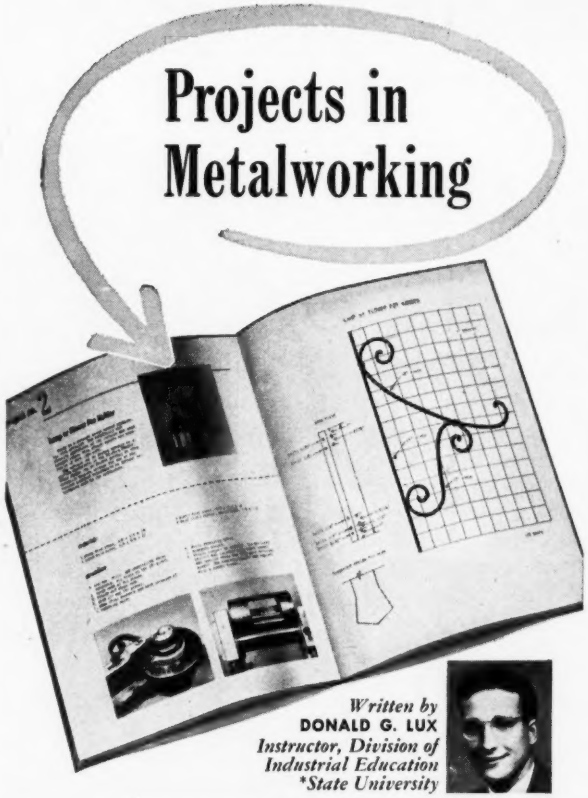

Written by
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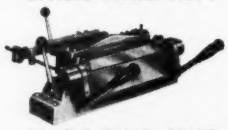

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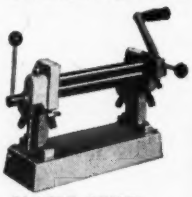

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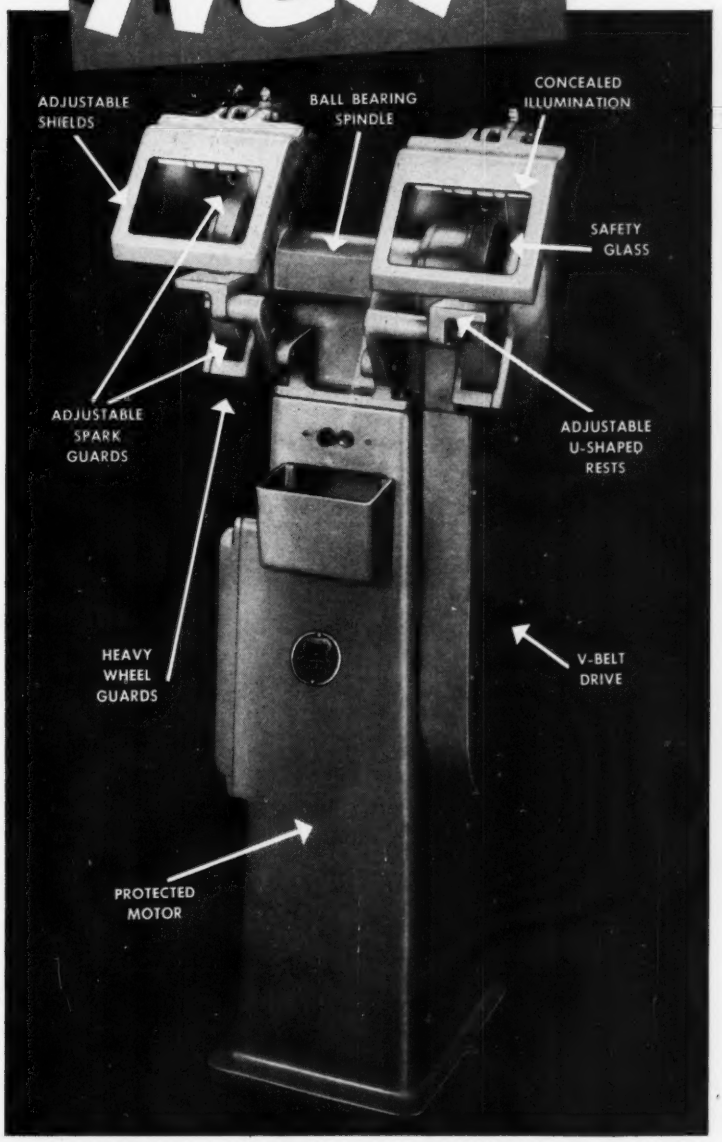

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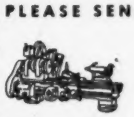

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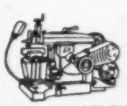

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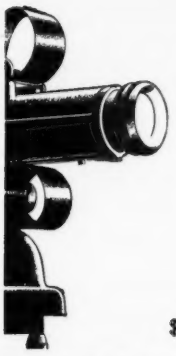

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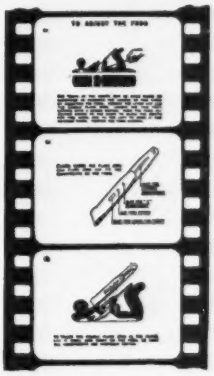

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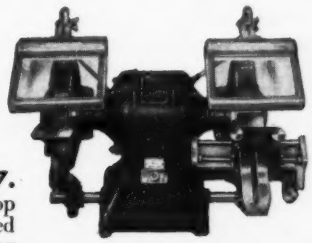

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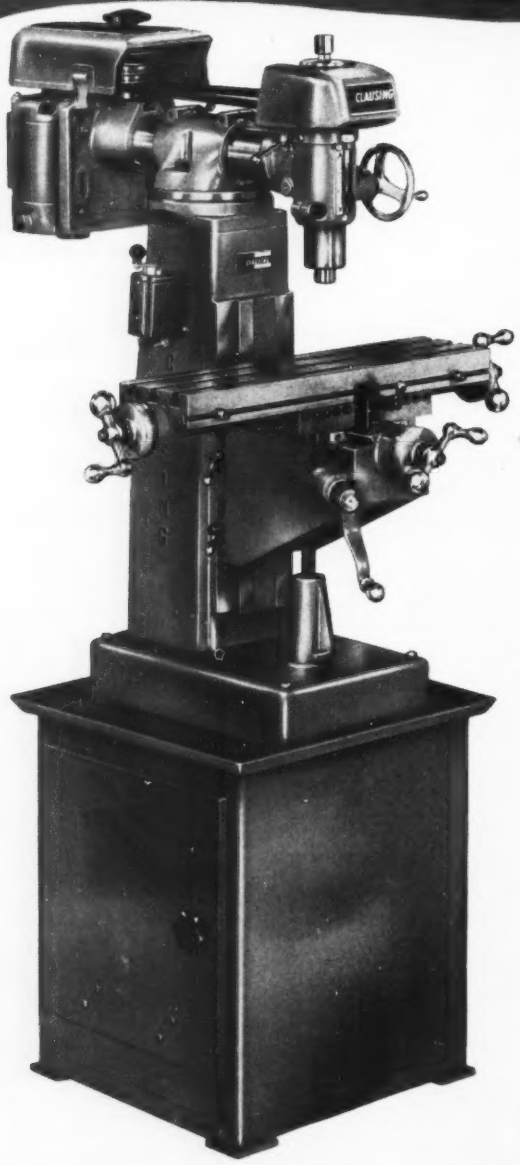

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The slow learner is not a monster. He just deserves more positive attention in programs based on his peculiar needs

Industrial Arts and The Slow Learner

By Bernard Blond
On leave from Hine Junior High School, Washington, D. C.

THE boy slumped back in his chair—the intense look with which he had started the industrial-arts class discussion replaced by a sullen mask, the blankness of which revealed his lack of comprehension. He had been trying to keep up with what was being discussed but had lost the thread and he knew from past experience that questions wouldn't help.

This boy couldn't be picked out of a crowd as a slow learner. His physical coordination was good and his social behavior acceptable, but his chances for school success were dependent on his being placed in a group of his fellows with whom he could compete on even terms.

The slow-learning pupil in an ordinary shop class is usually a very unhappy child. He is beset on all sides by situations which harass him, not always because they are beyond his comprehension, but because he is not given enough time to digest the pertinent facts that will make understanding possible. In the early grades this harassment is usually met by shyness and retiring within himself in order that he may escape situations which are beyond him.

After being retained at the same grade level several times, his shyness tends to change to sullenness and more than likely to the "problem" stage where his unhappiness transmits itself to those around him and he is just holding on until he is old enough to leave school and seek his own way.

Physical Activity Essential

Since the slow-learning child approaches the normal in his physical characteristics, and since bodily strength and endurance are among his greatest assets, any program for him should offer ample opportunity for physical development and muscular coordination as well as for the development of desirable health habits and attitudes. Many meaningful repetitions of desirable activities will aid in the formation of desirable habits, skills, and attitudes.

The slow-learning child will be happier and will live a more satisfying life if he develops the habit of doing the common tasks of daily living, of cooperating with others, of respecting authority, of feeling responsible for work assigned, and of using ordinary tools. All of his life, the slow-learner will be following the patterns set by others. He should, therefore, have the opportunity to observe and imitate the good example of others in a variety of social situations. Socially acceptable posture, appearance, manners, and speech may thus be acquired.

Since this type of child has limited capacity for abstractions, opportunities for first-hand experiences related to his daily life should be provided so that he may be able to see relations between his experiences in school and his experiences outside of school.

Success Is Essential

He has too often experienced failure. In order that he may develop a well-adjusted personality he must achieve success frequently. Whatever special aptitudes he possesses should be developed. If he shows no outstanding ability, the ingenious and sympathetic teacher should find some trait on which the child can build selfrespect.

Schoolmen have at times pondered the advisability of caring for, protecting, and educating at excessive cost, these deviates at the expense of the large normal group. Some have pointed to the millions required by state institutions and by public schools to educate and maintain these unfortunates; they suggest that the attempt to bear such a financial burden means near bankruptcy and a strain on the present social order.

However, Dr. Elise H. Martens has said,

> No chain is stronger than its weakest link. There can be no strength and security for America unless there is security for her weakest citizens, the weak of body, the weak of mind, and the weak in emotional stability. Nor, on the other hand, can America be strong unless there is strength and devotion on the part of her ablest ones—those gifted in intellect, in human relations, in the arts, who must give unselfishly of their best if the country they serve is to prosper.

Sound Objectives Important

Any shop program for slow-learners must be based on educationally sound aims, objectives, and procedures. The Committee on Standards of Attainment in Industrial-Arts Teaching of the American Vocational Association in its bulletin concerning instruction in industrial arts holds that

> Industrial-arts courses are part of general education and do not have a distinctly bread-and-butter justification. They are assumed to generate sympathetic interests in the whole of industry, as compared or contrasted with agriculture, homemaking, commerce, and certain technical professions. Instructors in this field aim at broad, rather unspecialized, and often remote values. They desire particularly that their pupils will understand themselves better during the time of occupational choice, and that they will grow in selfexpression and in the development of hidden talents.

This statement embodies a philosophy and a statement of purposes that is especially valuable for the teachers of slow-learners.

Teaching of shop work, except in the very old school, is usually a matter of individual help—even with the so-called normal child. With the slow-learning child, a certain amount of subnormality in intelligence and its usually concomitant factors, lack of coordination and reasoning power, is to be expected.

In almost every case, there is certain to be a slowness in comprehension that is just as apparent when trying to explain the proper technique in the use of a plane as in teaching two-place multiplication. The final results may be the same but the difficulties of bringing about the understandings necessary for the attainment of these knowledges or skills is in direct proportion to the speed of comprehension of the learner.

Individual Help Necessary

Accepting a slow learner as having less comprehension capacity makes it become apparent that individual help is the only possible solution—group work is only possible where the skills involved have already been learned and review is felt beneficial or the skill is very obvious and simple to understand.

The individual attention given by the teacher to refresh or refine a skill that a boy is at least acquainted with or, more often, to actually do an operation that is proving bothersome or, worse, boresome, helps along work on the project enough to prove the possibility of successful completion to the boy.

It is sometimes true that a part of the job will be the instructor's. This sort of overhelp is necessary in the case of the boy who comes into the shop firmly convinced that there is nothing he can do that's right—which very often is the slow-learner's attitude.

Selfconfidence will overcome lack of skill to a certain extent, especially if there is a successfully completed job to back up this confidence when later projects do not seem to be as easy as expected. This selfconfidence usually translates itself into a reluctance to ask for help unless actually needed, more perseverance even in the face of really difficult operations, and a self-set standard of work that is at times higher than that which the instructor demands.

Good habits and attitudes should be stressed for future actual job situations, as well as for immediate use. The lecture method should not be used but rather learning should be achieved through the encouragement of inherently good habits and attitudes as displayed in various situations.

Desirable Traits Stressed

Every phase of any such program should be designed to attempt to bring out and stress desirable traits. For example, in the study of a related occupation it should be emphasized that no matter how skilled a workman might be if he is not dependable and cooperative an employer will only hire him in an extreme shortage of qualified personnel and will lay him off at the first opportunity. The fact that good workmanship includes good work habits and healthy attitudes should be paramount.

Some points to stress are:

Following instructions exactly.

Planning beforehand.

Using materials wisely and thriftily.

Using effectively the whole working time.

Respecting the rights of others.

Asking for assistance courteously.

Giving help to others where it can be given in a cooperative spirit.

Observing all safety and courtesy rules for his own sake and for the good of the group.

Accepting responsibilities wholeheartedly, graciously, and cooperatively.

Developing personal habits of patience, perseverance, industry, responsibility, and integrity.

Tool Use Important

Through demonstration, practice, and application, with emphasis on the last of these, the various basic tools should be introduced. Individual study should be directed toward an understanding of the reasons for different aspects of construction. Using the proper procedure with the correct tool in situations best suited to the tool in question should be insisted on.

Correct procedures in the care, sharpening, and adjustment of all tools should be stressed.

The make-up of tool kits for the various industries should be studied and lists of suggested kits worked out. The uses to which these tools are put by the various craftsmen should be examined.

The core of the entire program should be the projects undertaken because interest is the keynote of motivation and a job which can be used or presented as a gift has more valid motivating interest to a slow-learning boy than the possible values in future employment of operations learned arbitrarily. Certain projects should be assigned and must be completed before a latitude of choice should be allowed.

Low quality should not be censured if it represents the best possible effort from the individual, but care should be taken to insure improvement wherever possible.

Summary

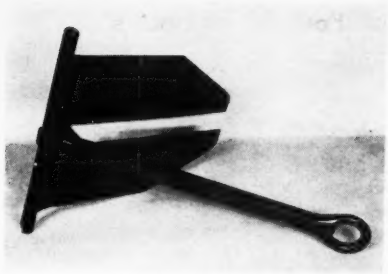
In summary, it may be said that the slow learner is here to stay and that teaching him will always be a major educative problem. Most authorities concede the benefits of shopwork for this type of pupil. Any school with a sizable percentage of slow learners and with only the traditional shops for woodworking, metalworking, and printing has the problem of offering enough industrial arts in forms that have intrinsic value for such children. A program designed to meet these specific needs must be based on educationally sound principles and be taught and administered competently and efficiently to achieve the desired goals. Occupational information should be considered an integral part of this program, though industrial-arts methods and objectives should be used in preference to vocational-education ones.

Since the slow learner needs special help it is conceded that industrial arts, to a greater extent than most other areas of learning, should give that help. This is so because of the close proximity of many of these boys to actual employment and a program based on industrial-arts values and giving occupational information of a practical nature may help the boy to attain and keep that employment. True industrial-arts values must be emphasized, because purely vocational training is desirable for only a small number. Good work habits and attitudes are essential and should be stressed in every area of the industrial-arts program.

The teachers should be indoctrinated with a philosophy based on understanding the slow learner and should have a consciousness of the necessity for flexibility of method and content to meet varied needs. Experimental methods should be tried with the concurrence and assistance of the administration of the school.

Educators have found that there is little difference necessary in methods used with bright and slow classes. Evidence indicates that almost every device that produces successful results with bright groups can be used with equal success with dull classes. Thus all methods and mediums are open to use and new methods may be devised with assurance of good results if properly planned and executed.

Programs following the tenets outlined above cannot entirely solve the problem of the slow learner, but they can help such children find themselves and attain the full measure of their capabilities. ★



With flutes of 1/4" steel plate, this anchor won a "place" in the Ford Industrial Arts Awards for student Glen A. Murray (photo by The Ford Motor Company).

No holding problem with this

Welded Boat Anchor

By Alden D. Groff

South High School, Minneapolis, Minnesota

LITTLE motivation is necessary to interest students in this boat anchor. After they hear an explanation of its principle, they usually want to start work on it immediately. And they can be assured that, if properly made, it really will work.

Tests made with this anchor on a wide 14′ boat in a large lake under extreme conditions proved that it has better holding power than other anchors of the same weight but of different design.

But more than that, the student who constructs this project will gain excellent experience in cutting with a cutting torch, bronze welding, steel fusion welding, forming metal, and setting up a job to specifications for welding. It is suggested that all welds be bronze except the outside corner welds.

A 3/4" i.-d. steel pipe can be used for the pivot sleeve, although the recommended stock makes a better job.

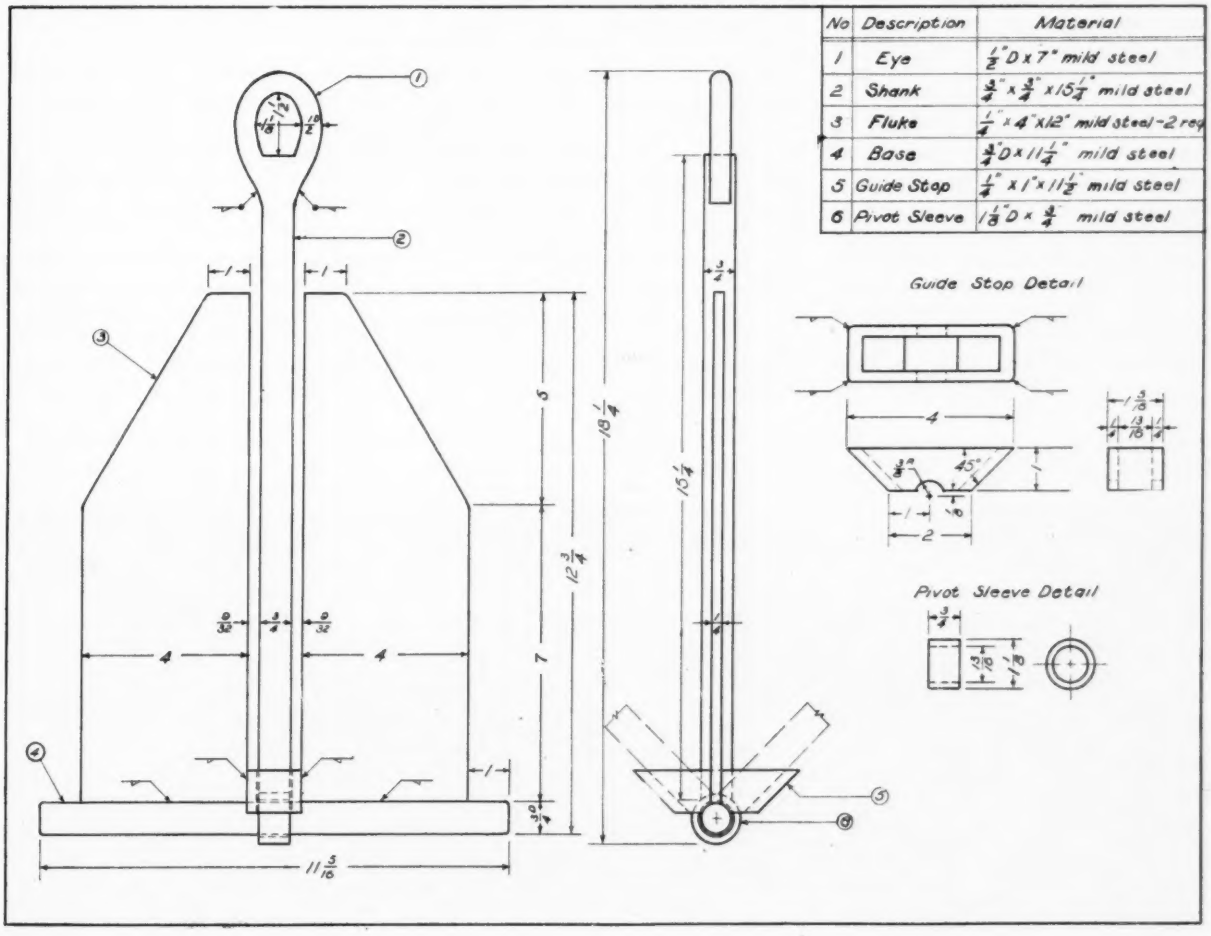
In making the anchor, cut stock for the various parts to size with a cutting torch and smooth the edges and ends with a grinder. Then set up and weld the guide stop, making fusion welds on the corners. Next, weld the pivot sleeve to the shank with a bronze weld. Slip the pivot sleeve over the base. Place the flukes and the guide stop in position and tack them.

Check to be sure that the guide stop is perpendicular to the flukes and that it is centered on the base. Also see that the shank will move 45° to either side of the flukes. When this is done, make bronze welds between the flukes and the base, and between the flukes and the guide stop.

Then form the eye, beveling the ends so that when they are welded they will appear to blend smoothly into the shank. Weld with bronze welds.

Finish the anchor by applying red lead or zinc chromate primer followed by one or two coats of good marine paint.

Now the boy has a project of which he will be proud for years to come. ★


No | Description | Material
1 | Eye | 1/2" D x 7" mild steel
2 | Shank | 3/4" x 3/4" x 15 1/4" mild steel
3 | Fluke | 1/4" x 4" x 12" mild steel - 2 req
4 | Base | 3/4" D x 11 1/4" mild steel
5 | Guide Stop | 1/4" x 1" x 11 1/2" mild steel
6 | Pivot Sleeve | 1 1/8" D x 3/4" mild steel
Guide Stop Detail
Pivot Sleeve Detail

Ornamental eagle molded by use of matchplate pattern at right.

Foundry students should know production techniques, so

Let's Make a Matchplate

By H. F. Dietrich

Head, Foundry Department, Kansas State College, Manhattan, Kansas

ALTHOUGH a matchplate pattern is a part of the industrial technique of production, it is also useful to the school shop instructor in teaching foundry practice. A pattern of intricate design can be molded by a student of little experience with assurance that the partings will be cut correctly, and the gating properly placed in the mold, thus assuring a good casting. Less effort and skill are required to make a mold from an irregularly parted matchplate pattern, than would be necessary to make a mold from a flatback loose pattern.

The technique of molding with a matchplate pattern is simple. The pattern is placed between the flask sections, and the drag mold rammed in the same manner that would be used with a loose pattern. After rolling over, no parting—or coping down—is required because the matchplate contains the irregularity of the parting. The cope is rammed without sprue pins; the sprues being cut with a sprue cutter after the cope is rammed.

Because the pattern is rapped before the cope is lifted, there is less danger of a bad lift of the cope. As soon as the pattern is drawn and the sprue holes cleaned, the mold can be closed. All gating is a part of the matchplate, thus eliminating the need to cut gates.

A Comparison with Production Methods

Pattern plates offer the foundry student a comparison of hand work with production methods. Even if no production machinery is available, matchplates, or mounted patterns with gating attached, will teach the time-saving advantages of production equipment.

Pattern-making techniques include: mounting cast or machined plastic or metal patterns and gates on flat plates; pressure casting aluminum in investment molds; and the time-tested method of sand casting the matchplate. The last method will appeal to the school shop instructor because it places the least strain on the budget. With a little careful workmanship, a serviceable pattern of some useful or ornamental object can be cast with the materials available in even the smallest school shop.

The advantages of a matchplate are several: (1) The pattern of interesting design which is incorporated into a plate remains in the shop for a longer period of time than does its loose counterpart. (2) Castings of irregular parting lines can be molded in a shorter period of time. (3) Gating is predetermined, thus allowing the inexperienced neophyte to produce an acceptable casting of even the most delicate design. (4) Comparatively sturdy pins guide the hand in drawing of the pattern. (5) Metal patterns are more serviceable under rough handling.

Few materials are needed to make the matchplate. They are: (1) pattern to be used as the master; (2) matchplate flask of sufficient size and of accurate construction; and (3) hand tools and other regular molding material and equipment.

If accurate lineal dimension is not important, the same pattern used for loose molding can be used as the master pattern for the matchplate.

A flask of larger proportions than the finished plate must be used to allow for gating of the plate. The technique used to make the plate requires that the pins of this flask be accurately aligned at right angles to the face of the flask.

For small plates, a spacer can be cut to design for the pattern plate or flat bar stock can be cut to a length permit-

Cope being lifted after molding with matchplate elevated between the cope and the drag.

Examples of matchplates with a flat plate at the bottom. Eagle pattern in upper right-hand corner is shown being molded in picture at the left.

ting the matchplate flask faces to rest on the bars. The bars then can be spaced to accommodate variable plate dimensions.

Molding Technique the Same

Molding technique is no different from that of careful loose molding. The same tools and materials are used. Facing of new sand is riddled through a fine riddle to allow smooth parting surfaces and accurate partings. To prevent later excessive scraping and finishing, the mold should be rammed firmly and evenly, thus avoiding metal penetration and roughness. Gates and runner bars to be used in the final mold can be incorporated into the matchplate pattern.

The pattern is placed on a smooth and level mold board. Allowance must be made for the *inside* dimensions of the flask to be used for casting. An irregularly shaped pattern placed too close to the flask limits will cause a parting of undesirable shape. All partings must reach the parting line of the flask within the inside limits of the flask to be used for castings. Because matchplate patterns are drawn from the sand at right angles to the flask face, patterns of angle draft must be bedded, or supported, in such a manner that they can be withdrawn vertically without damage to the mold.

After the drag has been firmly rammed and rolled, the parting is cut in the same manner as though the mold were to be used for ordinary casting. All parted surfaces should be slicked smooth. Any roughness, although it would be matched by the cope sand, will create some cleaning difficulty and would detract from the appearance of the matchplate. To determine the exact parting line, the pattern can be rapped lightly after the approximate parting has been cut. Then it should be slightly withdrawn. This action will break the sand at the parting line, after which the pattern can be returned to the mold and the loose sand blown from the surface. The parting is then slicked smooth.

Parting material is dusted on the drag, and the excess blown from the mold surface. Because the entire mold surface is to be used as casting surface, any excess parting material which might be removed after the mold is complete would tend to cause roughness of the plate. Although such roughness may not affect the future casting, it would detract from the appearance of the matchplate.

Locating Gates and Risers

Gates and risers are located by scratching on the drag surface the outline of the *external* dimensions of the flask to be used for castings. The line will be visible on the cope surface when the mold is opened and can be used to locate the necessary cope gating. If runner bars and gates are to be incorporated into the pattern, attention must be paid to the enlarged cross section they create in the plate. Risers must be placed to feed the shrinkage of metal at that point. Care should be exercised in ramming the cope with the peen. Any impression rammed into the drag will be reflected as a wave in the finished plate.

After the mold has been opened and the patterns withdrawn, gates and runner bars, of the same type as those to be used in casting, can be cut into the mold. These should be slicked smooth to avoid excessive finishing work after the plate has been cast.

Spacer plates, or bars, are placed on the drag before the cope is returned. For small plates, the spacers should be 5/16″ to ⅜″ in thickness, depending on plate area. The spacers serve to retain the metal, and to determine the size and shape of the matchplate. If the spacers used on small plates are too thick, the possibility of shift is increased.

The finish of larger plates will be enhanced if the mold is skin dried before it is poured. Molds should be inclined to a 15° angle, with the sprue at the lowest point. To avoid metal penetration of the sand, pouring should be done with metal as cool as possible.

Little Finishing Is Necessary

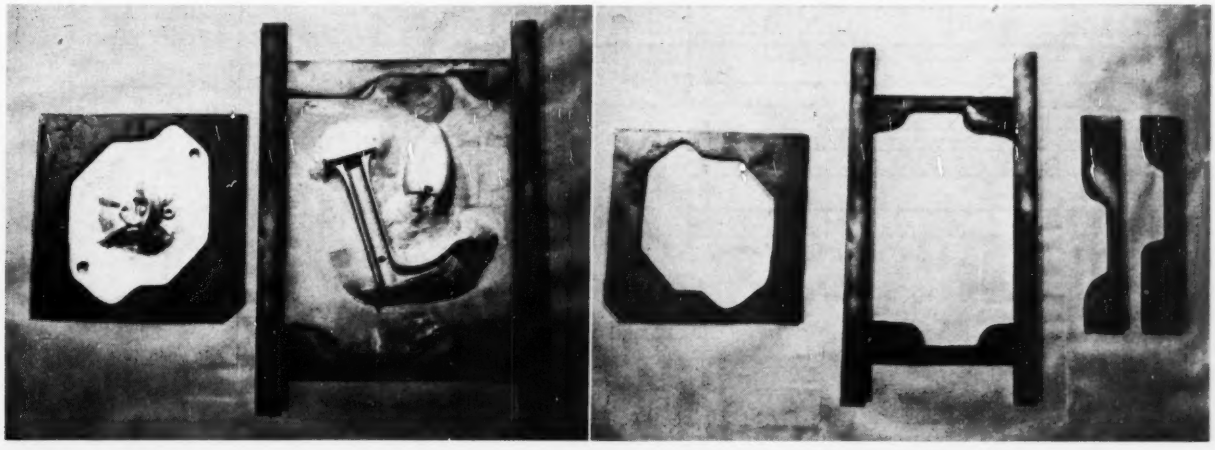
After the gates and risers have been removed, very little finishing of the matchplate should be necessary. The finishing that is necessary can be done with Swiss pattern files, and a file ground to a scraper blade. After a sample has been cast, any fins appearing on the casting can be corrected by filing the matchplate in the places where the fins have developed.

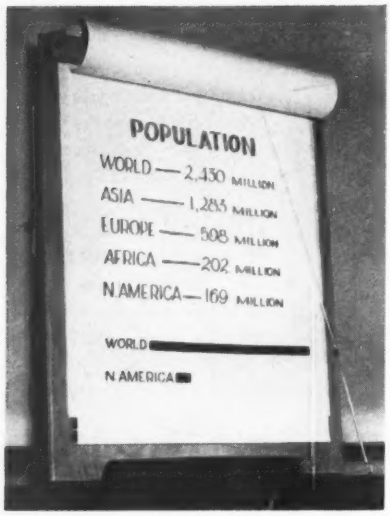
Guide holes can be drilled in the finished matchplate to the same center dimensions as those in the molding flask. If solid pins are used, one of the holes can be made oval to permit easy drawing of the pattern and to prevent binding on the round type of pin. However, pin guides are a matter of standard shop practice to be determined by the individual shop.

If flat plates are needed on which to mount loose patterns, they can be made by the same method. By ramming both cope and drag on a smooth, level surface, placing the spacer, and pouring into the cavity provided by the spacer, flat plates of correct shape and size will result. ★

Examples of matchplates shown in spacers in which they were cast.

Spacers used to separate the cope and the drag. On left is plate cut to the flask design. In center are bars used with end plates cut to design while extra end plates for wider matchplates are at right.





A stack of newsprint can be fastened to this board and sketches or writing put on as they are needed, or prepared sheets can be used which have been lettered or drawn in advance.

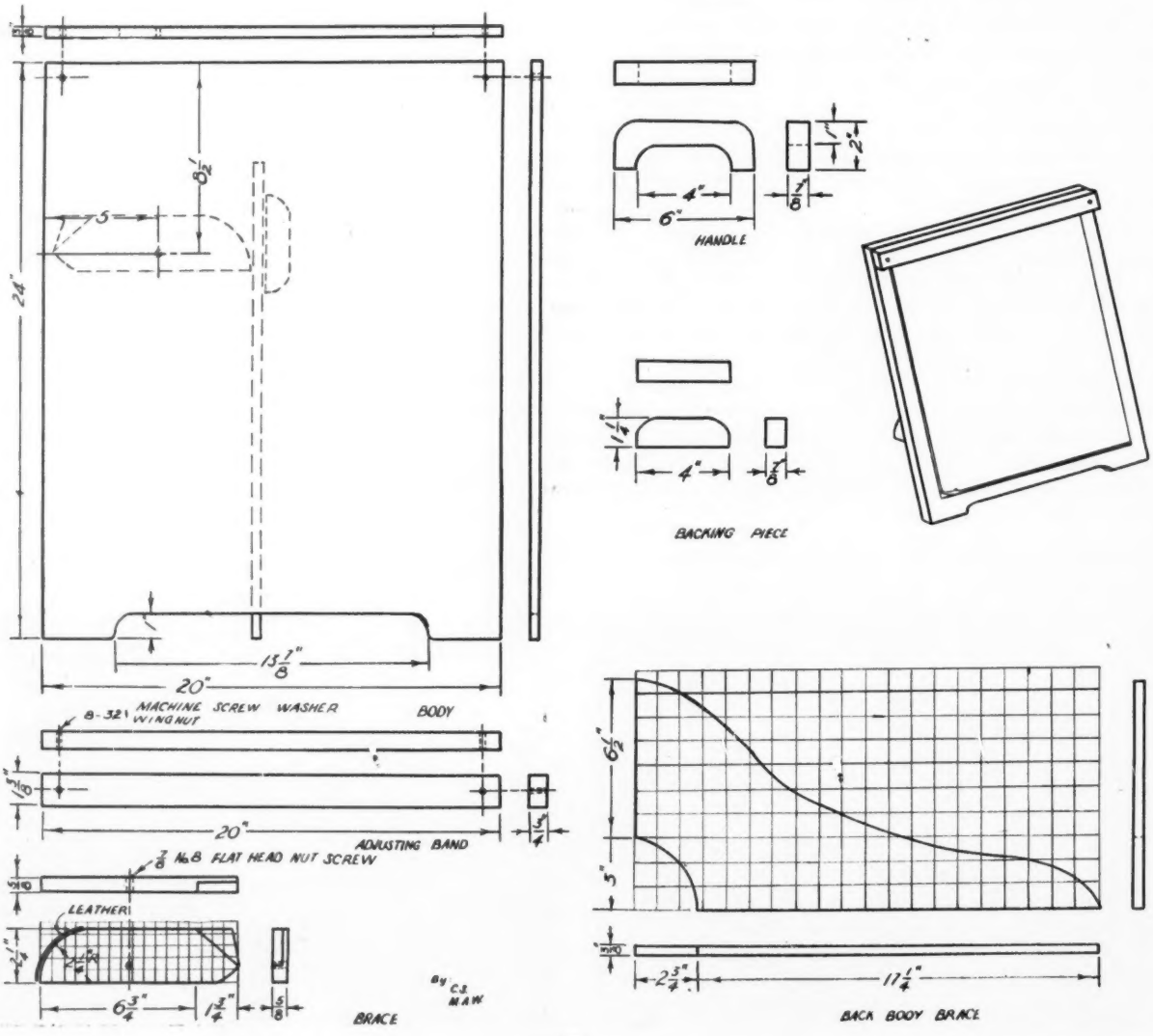
Teaching is made easier with this

Modern Illustration Board

By Emerson E. Neuthardt

Professor of Industrial Education, State College for Teachers, Buffalo, N. Y.

THE problem of illustrating while teaching the industrial arts is unique to our field because it is not always possible to give an industrial-arts demonstration, lesson, or lecture in front of a blackboard. Frequently the shop teacher finds himself giving a demonstration on a machine or at a workbench or in



a far corner of the shop where he does not have access to any ready means for writing down new words or for illustrating an important point in his lesson.

To solve this problem, the writer developed the illustration board shown here which consists of a piece of ¼" plywood with a ½" stack of newsprint fastened to it. A leg swings out from the back of this board so it is possible to set it on the floor, on a bench, on a window sill, or if necessary, fold the leg to the back of the board and hang it on a hook or nail.

With the illustration board, the teacher can easily write out the new words that appear in the lesson, illustrate fine points of the lesson, or do any of the hundreds of drawings or writings necessary when conducting a class.

Teachers know that there is more to giving a lesson than verbalization or demonstration by the teacher. In order to complete a modern lesson, illustration and writing are equally important with the spoken word and the performance of the hands. Only when we combine these three is it possible to approach the ideal lesson and make use of the maximum learning capacity of our students.

In the construction of the illustration board, a piece of fir plywood is cut out 24" long and 20" wide. Next the recess that forms the legs is cut out as shown in the drawing.

The second step is to make the clamp-on bar which holds the stack of paper on the board. The handle is constructed and fastened in position so that this teaching aid may be carried easily. This handle serves as a hanging mount as well as a convenient carrier.

The next step is to make the back body brace which is also constructed out of ¼" plywood and the brace lever which is made of ¾" pine or basswood. The back body brace is secured to the back of the illustration board by two 1" butt hinges fastened with ¼" No. 6 f-h wood screws. The brace is fastened in the position shown in the drawing by a ⅞" No. 8 f-h screw. The backing piece is used to support the back body brace when in a standing position. The brace serves two purposes: to clamp the back body brace firmly against the backing piece and to hold the back body brace in the folded position when it is not in use.

I have found the illustration board to be of practical use in the industrial-arts shop or when giving talks to lay or teacher groups. Either colored chalk or crayons can be used to write on the paper clamped to the board. ★

Students are challenged by this birch

Inlaid Fruit Bowl

Grooving for the inlay strip in this project requires care in turning on the wood lathe.

By James E. Seitz

East Juniata High School, Cocolamus, Penna.

THIS fruit bowl is made of birch and decorated with an inlay strip of contrasting pattern. Although relatively simple in design, it affords a good exercise in inlaying on the lathe.

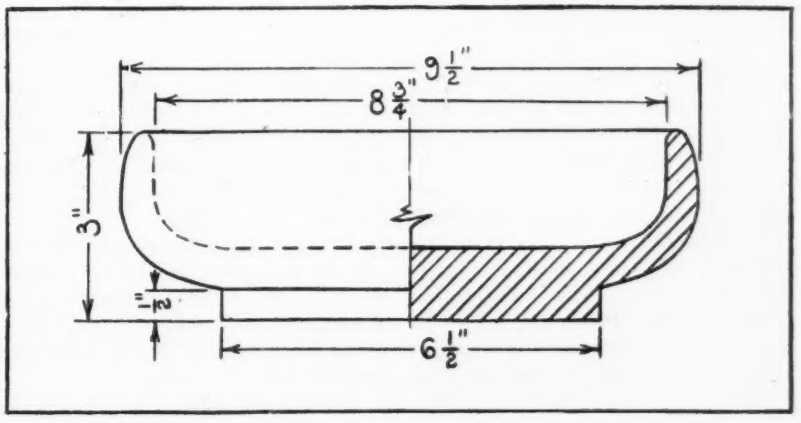
Properly applying an inlay to turned work is a definite challenge to the student. If the student works carefully, he will be well rewarded for his efforts. On the other hand, inlaying carelessly done ruins the project and it would be better to leave the surface plain than to do the job poorly.

The inlaying process should be undertaken after the outside of the bowl has been turned to contour and before the inside is shaped. There are two reasons for this. First, if a mistake is made in grooving for the strip, the project will not be completely ruined because the outside can be turned to a smaller diameter, thus making the surface plain once again. Second, as the fibers are cut when turning the inside, the bowl may warp ever so slightly. This warping will cause the bowl to run eccentrically, rendering impossible any successful attempt to obtain a cut of uniform depth on the outside of the bowl.

The groove must be made with accuracy. Two lines, the width of the strip, should be marked on the outside circumference. The space between is then removed with the parting tool to a depth equivalent to slightly less than the thickness of the strip. Check occasionally to see that the cut being made is neither too deep nor too wide. If the cut is too wide, the strip will fit loosely. In this case, turn the outside of the bowl to a smooth surface and attempt the cut once again. Further steps may be taken when the proper cut has been made.

Moisten the strip with water, bend it into place, and cut it to length. After an ample amount of glue has been applied to the groove and the inlay strip inserted in it, a band of inner-tube may be used to hold the inlay in place. Allow the glue time to set, then turn the inside of the bowl, and sand all over.

The final process, on which much of the beauty of the bowl depends, is the finishing process. To be safe, it is best to finish a wooden food container such as this with a nontoxic substance such as spar varnish, mineral oil, vegetable oil, or olive oil. ★



A final word on

Trade Tests vs. Trade Time

By Thomas Diamond

Chairman, Editorial Advisory Board, SCHOOL SHOP, and Former Head, Department of Vocational Education, University of Michigan

WHEN an article appears in SCHOOL SHOP, it delights us if some of our readers feel the urge to take issue with the author by presenting to us other, and perhaps opposing, points of view. When this occurs, it is our policy to present the new picture to our readers as freely as we did the original one.

With these broad policies in mind, our readers will understand why two articles, apparently contradictory, should appear, one in the November issue and the other in January. The first of these, "Must T & I Teachers Be Tradesmen?" was written by A. A. Vezzani, Lecturer in Vocational Education at the University of Michigan. The second, "T & I Teachers Must Be Tradesmen," was written in response to the first by Gerald B. Leighbody, Director of Vocational and Practical Arts Education, Buffalo, New York. In addition to these, a number of other articles and letters have been received, indicating that the question under discussion is of more than passing interest to our readers.

The correspondence we have received provides us with the opportunity to point out that there is a tendency on the part of some who take issue with an author to read into his article implications which have no place in his thinking, and which, by no stretch of the imagination, appear in the text. For example, one correspondent deplores Mr. Vezzani's lack of industrial experience. As a matter of fact Mr. Vezzani earned his living in industry for many years as a journeyman tool and diemaker. He is fully qualified as an automechanic, and he has taught die design to classes made up almost exclusively of diemakers and die designers who are presently engaged in this work in industry.

Another individual reminds Vezzani that the teacher who teaches in the field of industrial arts and the one who teaches T & I classes are two different types of people, each one having an important function to perform. Vezzani does not even suggest that they are either different or the same. He may be willing to admit that each of them has an important function to perform, and he may be willing to go so far as to grant that they are different, especially in larger communities. However, he maintains that there are many situations in smaller communities where a teacher must be able to teach in both areas. When this occurs, the teacher may be an industrial-arts teacher who has had "adequate" experience in the trade to be taught.

When this decision has to be made Vezzani asks, "Shall we discover what the candidate knows and can do by appropriate tests, administered by members of the craft concerned, or shall we depend entirely on the number of years he has worked as a journeyman?"

Even Leighbody falls into the error of implying that Vezzani goes on the assumption that "teaching of industrial arts augmented by a smattering of part-time work experience constitutes proper preparation for the teaching of an occupation." As we read Vezzani's article we are unable to find that he even suggests this. He merely suggests a procedure by which we may discover what the candidate knows about, and can do in the trade he proposes to teach. If the information obtained through the application of the test indicates that he does not possess what is considered to be adequate skill or knowledge, he is disapproved, regardless of whether he is an industrial-arts teacher or a journeyman in a trade.

When one reflects on the merits of the two points of view expressed by the writers, he must have in mind the question: when is a person qualified to teach a trade?

Leighbody draws attention to the Smith-Hughes Act in which he finds that teachers in the field of T & I education must have had "adequate" experience or contact in the line of work in which they propose to teach.

On pages 21 and 22 of the 1937 version of *Vocational Education Bulletin No. 1*, we find that teacher trainers and supervisors in the field of T & I education must have had "practical working experience."

And on page 62 of the 1948 edition of *Bulletin No. 1* we are informed that "teachers should be selected on the basis of trade knowledge and experience. . . ."

Not anywhere in these documents do we find that "adequate experience" or "practical working experience" must be obtained through a specified number of years in the trade. In view of this, it would seem possible that industrial-arts teachers, whether college trained or not, might build up through the years enough experience so that it might be accepted as being "adequate."

However, Vezzani proposes to test this adequacy by subjecting candidates to a series of tests. These tests are not conducted by people who have merely a superficial knowledge of the trade concerned, but by employers and journeymen who are generally accepted as craftsmen.

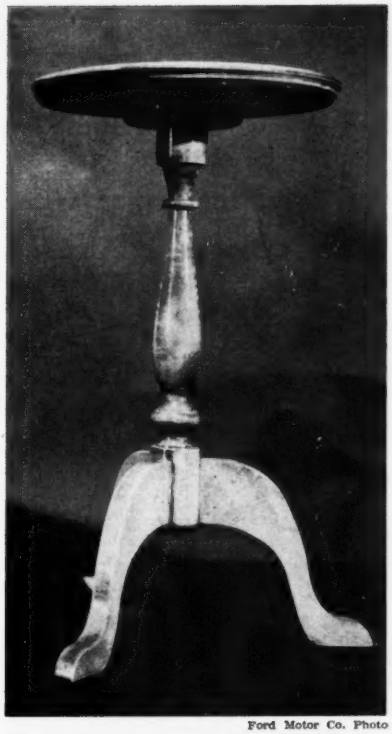
Leighbody maintains in his article that tests do not measure competence. While it is conceded that such measurement may not tell the complete story about a teacher's competence, it can be said with equal assurance that if we rely on the number of years a person has worked in a trade as a basis of measurement the results will be just as incomplete.

In the opinions expressed by our correspondents, one point of view is taken by individuals who are seeking a way out of a situation in which it is not only expedient, but absolutely essential, that a teacher be found who can teach both industrial-arts and T & I classes. The other attitude is based on a tradition which has been established in the minds of some educators since the enactment of the Smith-Hughes Act.

As these opinions appear to be in conflict, we are confronted with the problem of whether it is better to explore the field of industrial arts to see if we can find some teachers who have acquired "adequate trade experience," and who desire to do both types of work, or to be traditional and insist on doing things as they have always been done.

In conclusion may we say that in all probability Vezzani and Leighbody would agree that, in general, T & I teachers should have had wide experience as journeymen. It is likely, too, that Leighbody would concede that occasions arise when we need a teacher who can function in both industrial arts and T & I teaching. If the two authors were to confer, Leighbody might be willing to admit that, here and there, we have industrial-arts teachers who have had enough contact with the trade to do a creditable job in the area of T & I

(*Continued on page* 18)



Ford Motor Co. Photo

Maple was used in making this attractive table which is finished with a sprayed-on coat of lacquer, rubbed with rotten stone, and waxed.

Much can be learned by students about woodworking when making this

Colonial Table

By Fred E. Ullrich

Westchester High School, Los Angeles, California

TRADITIONAL in design, this colonial table is an excellent project for a beginning class in woodworking at the senior-high level.

We have found that students have their interest aroused by the challenge the table presents and, more important, it requires a large number of basic tool operations that students in beginning woodworking should be able to do, to say nothing of the wood turning that is required.

Jack Olaf, a Westchester High School student, received a third-place award in the Ford Industrial Arts Awards in wood turning for tenth-grade students for the table shown in the picture.

This project offers an opportunity to learn about both face-plate turning and turning between centers which is not usually true of a single project. In addition, it involves the layout of a pattern for the legs and the use of the bandsaw or jigsaw in cutting them to the required shape.

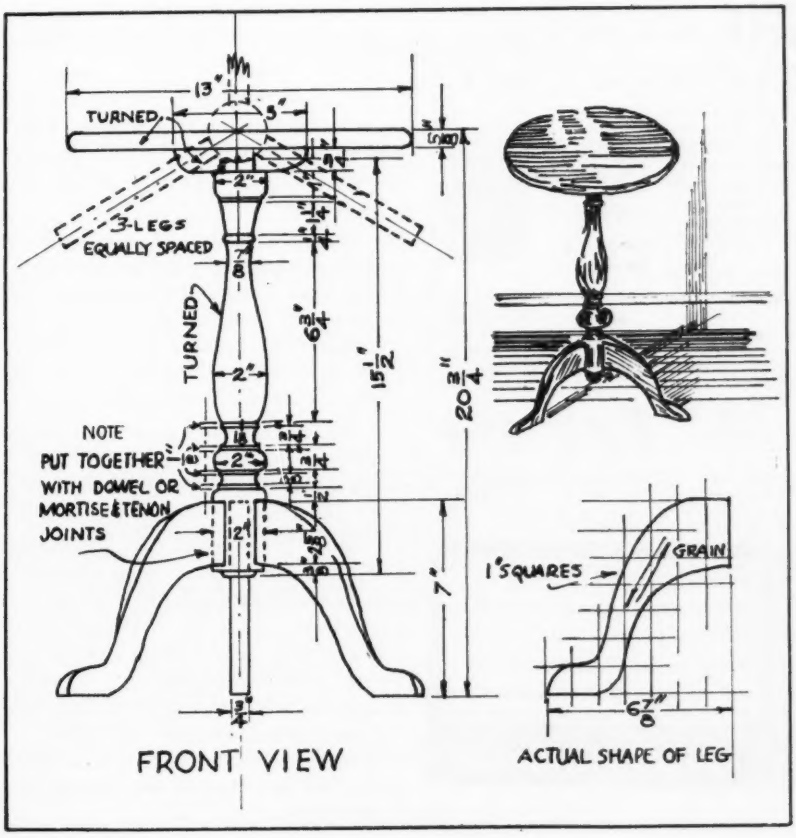
Then the location of the legs around the circumference of the post must be determined and the dowels or mortises by which the legs are attached to the post have to be provided.

From the above it can be seen that there is a sufficient variety of operations to warrant the use of the project in a beginning course in furniture making and woodworking.

The materials used can be selected by the student with maple or birch being most appropriate for colonial or early American furniture. The cost of materials for the project is not high, which is another point in its favor.

An appropriate colonial or early American finish should be used, of course. We had the best results with a sprayed-on lacquer finish which was rubbed down with rotten stone and oil. A final coat of wax produced a soft and pleasing luster.

The completed job is an attractive and useful item, the making of which gives the student an opportunity to learn a great deal about wood turning and furniture making. If the boys have any intertest in woodworking, the project sells itself to them. Also, it has been an excellent public-relations item as the parents and friends of the students who have made these tables are much impressed by them. ★



make this table yourself!

You'd pay $29.00 for this at a store!

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This beautiful WALL SHELF

Get this shelf FREE by ordering any combination of 3 DU-IT-URSELF kits. It's useful, handsome, easy to make! Hurry!

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154M10—Mahogany Coffee Table
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154B12—Oak Step Table
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154M10		12.45		9.95	18 lbs.
154M3		12.45		9.95	17 lbs.
154B5		14.45		11.95	26 lbs.
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Trade Tests . . . . . *from page 16*

teaching. If so, we are faced with the problem of selecting those who can qualify. Vezzani suggests that this be done by means of appropriate tests. Can you suggest a better method? ★

Strictly Personal

ABOUT YOUR FELLOW TEACHERS

LAWRENCE BOROSAGE, chief, trade & industrial education, Vocational Division, U. S. Office of Education, Washington, D. C., has resigned to join the faculty of the vocational education department at Michigan State College, East Lansing.

GEORGE I. MARTIN, formerly state supervisor of agricultural education in Georgia, is the new state director of vocational education.

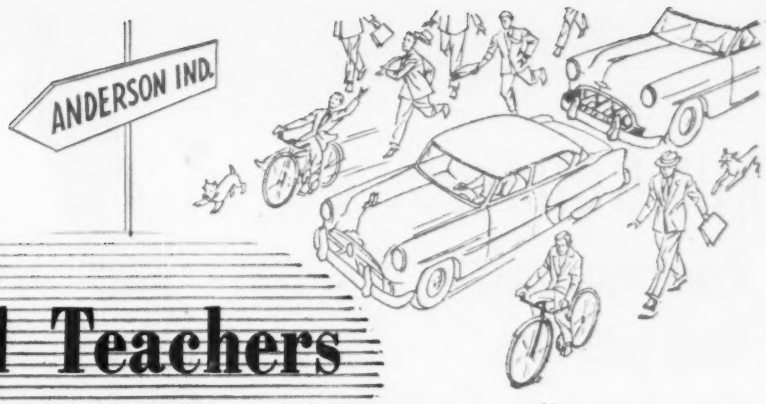
HAROLD WASSMER is a new assistant in industrial education, New York State Bureau of Trade and Technical Education. He previously taught drafting and building construction at the State Agricultural and Technical Institute, Delhi, N. Y.

CHARLES RISHER is a new instructor in industrial arts at Eastern Carolina College, Greenville, N. C. He formerly was at the University of Missouri, Columbia.

EDGAR H. STRONG is now associate director, vocational hand arts and crafts, New York Bureau of Occupational Extension and Industrial Services. He previously was a member of the faculty of the industrial-arts department at the State College for Teachers, Buffalo, N.Y.

FRANCIS H. WING, former associate superintendent, vocational education, Buffalo, N. Y., public schools, died September 18.

JOHN P. WALSH, New Hampshire state director of vocational education; C. L. GREIBER, Wisconsin state director of vocational education; E. M. CLAUDE, Illinois state supervisor of T & I education; and HAROLD OSTREM, Minnesota assistant state director of vocational education, with other American educators, studied post-war education in Germany this fall as guests of the German government. ★



Vocational Teachers

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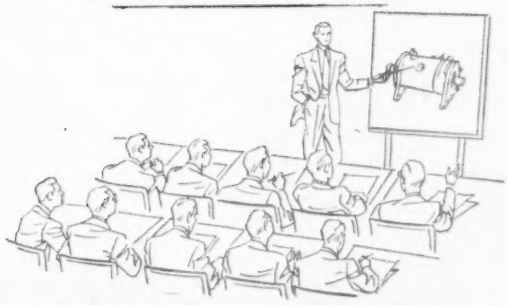
Delco-Remy Summer Courses

in AUTOMOTIVE ELECTRICITY

July 5-16 • July 19-30 • August 2-13
1954

Anderson, Indiana



Again the Delco-Remy Division of General Motors offers summer courses in Automotive Electricity for instructors in Automotive Mechanics—college, high school, or trade school. No charge will be made for tuition.

Each of the three courses will cover the fundamentals of electricity and magnetism, batteries, cranking motors, ignition systems, generators and generator regulators, as applied to automotive equipment. Theory will be supplemented by practical laboratory work and excursions through Delco-Remy plants.

If you are interested in attending one of the courses, fill out and mail the coupon. Full details of the courses, living arrangements, etc., will be sent to you promptly. Please number your 1st, 2nd, and 3rd choices of dates.

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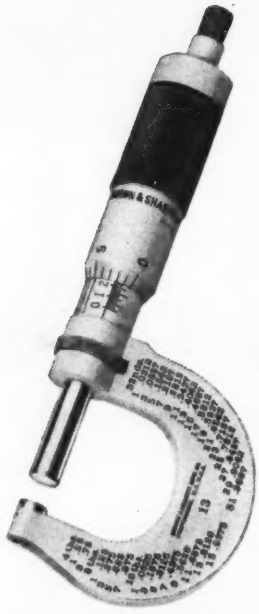

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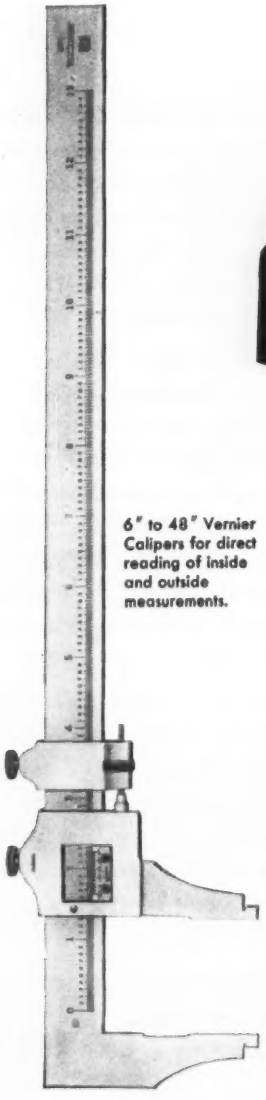

6" to 48" Vernier Calipers for direct reading of inside and outside measurements.

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Diamond Dust

Abrasive comments from that doughty Scot, Tom Diamond, former head, Department of Vocational Education, University of Michigan, Ann Arbor.

The Life of Riley

CERTAINLY, if you are a shop teacher, you have encountered one of those itinerant creatures who wanders around from school to school, heeding not where he stops, but always intent on what he is pleased to call teacher training. He is a kindly soul, and is usually prepared to "shoot the breeze" about fishing, hunting, golf, or what have you. Apparently, his sole purpose in life is to call on a teacher, pass the time of day, and then move on to his next resting place.

If one examines his activities superficially, he appears to be a man who has no fixed responsibilities. He is a carefree individual who wanders hither and yon over his "beat," stopping here and there at his favorite lunch wagons to consume countless cups of coffee in order to keep himself from going to sleep on the job. It is a delightfully nomadic occupation which has great appeal to the uninformed brethren who see him occasionally as he pauses in his wandering to visit a teacher who is loaded down by the responsibility of keeping 30 juvenile devils from chopping their fingers off. Pretty soft job, is it not?

It is true that he has the misfortune to have to meet a group of teachers in a class occasionally. He is unfortunate in that, when this occurs, the meetings are usually held in the late afternoon or evening when union rules dictate that every worker shall be released from his daily toil. Added to this he has to contend with a group made up of individuals whose real interest in what he has to present to them is extremely limited.

In some cases any interest that may exist is based on the fact that attendance enables the student to collect two additional hours of college credit. Others attend because of the iniquitous standards set up by unsympathetic state departments which make their attendance imperative. And still others attend because some local Hitler says they must.

Added to these questionable stimulations, the members of the class are likely to be teachers who have wide experience, and who feel frequently that they have all the answers. Is it any wonder, therefore, that there is apt to appear an attitude which is felt more than it is

expressed: "Teach me anything if you can. I dare you to try!"

Notwithstanding these attitudes on the part of those who attend, it is surprising to find that the teacher-trainer — the fellow with the soft job — has something which even the most skeptical teacher finally recognizes as being worthy of note. He suggests new or different ideas about teaching which cause the unbeliever to change or modify his procedure in his classes. And where did he find these ideas? Usually they are not original. More than likely he observed them on those occasions when he hesitated in a school shop ostensibly to discuss with the teacher "the big one that got away."

In other words, as he goes from shop to shop, he finds things that are worthwhile from the standpoint of teaching. This enables him to pass along to others ideas that might otherwise remain in the possession of one individual. Since they are teachers, those who attend the classes usually recognize the value of what they are getting and begin to appreciate that the lazy loafer who is in charge of the class has something from which they can profit.

If this was all that the teacher-trainer did, his time would be well spent. But, even when he is engaged in what may appear to be social contacts with individual teachers, he provides them with a valuable service. In his casual conversation he may discover that the teacher is concerned about a problem in his course of study, in his assignment sheets, in his class discipline, in his methods of handling tools, equipment, or materials, or in any one of the multitude of situations with which a shop teacher is faced. When this happens, the teacher-trainer has an opportunity to suggest solutions which he has observed elsewhere, and which may not have occurred to the teacher concerned. When one of these suggestions appeals to the teacher, an occasional visit from the trainer, who by the way "has nothing else to do," enables him to guide the teacher in his efforts to make changes when he feels they are desirable.

This individual work is immensely valuable since it is done with a teacher who is confronted with a specific problem, and who is seeking ways of solving it.

Then, too, this fellow who has the easy job takes time to keep the teacher informed on current literature in his field, and to bring to his attention sources of material in which he should be interested.

Much more might be said about the activities of the teacher-trainer. How-

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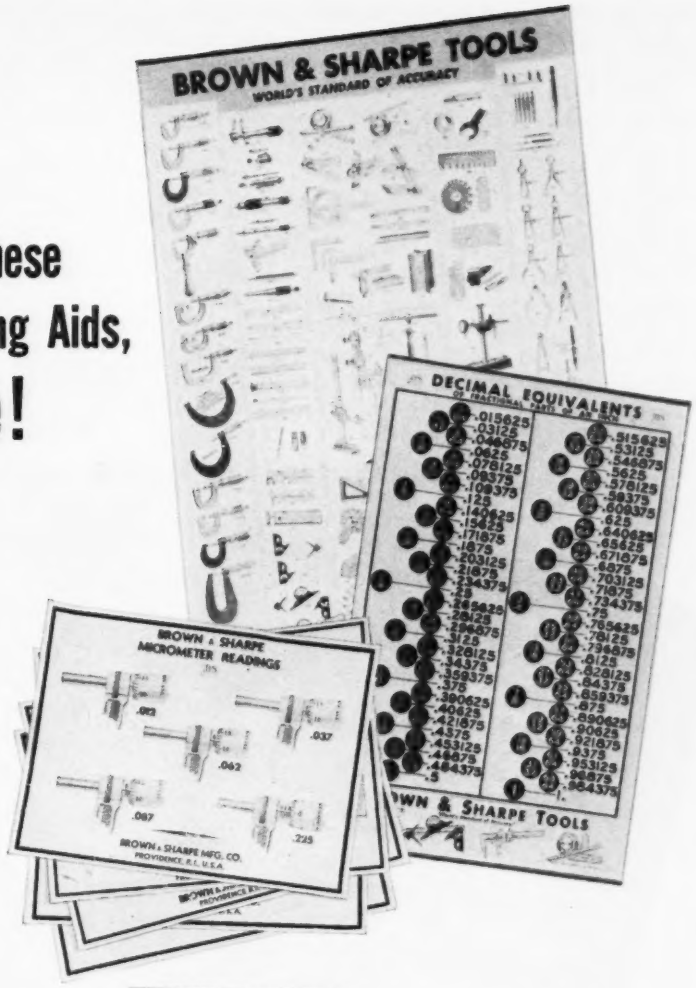

Decimal equivalent charts in wall and pocket size; wall charts illustrating micrometer, vernier, and protractor readings; booklets on how to use the various tools; big tool charts . . . all these training aids are available to you and your students free of charge from Brown & Sharpe.

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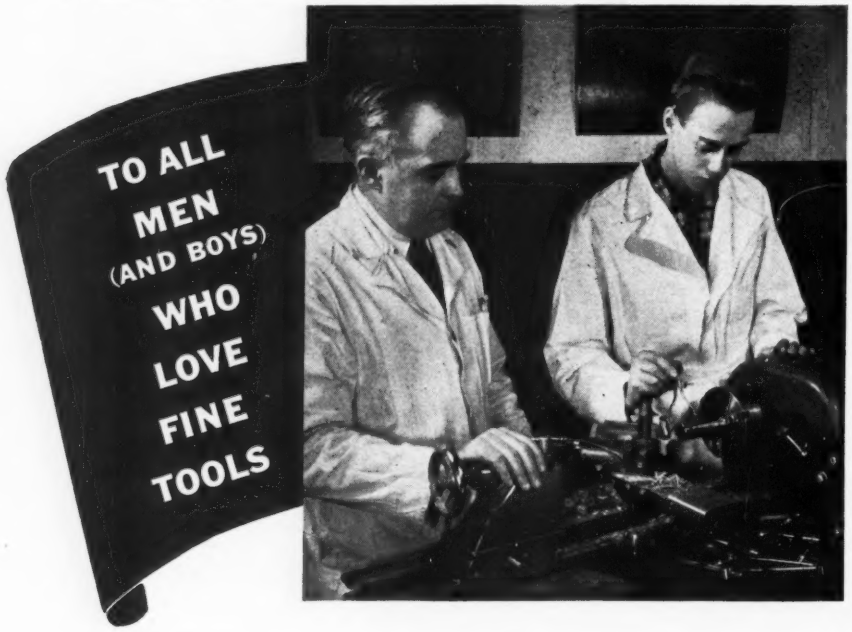
ever, it must be kept in mind that whatever he does is done under conditions which would make even strong men falter.

In the first place, he is divorced from his home and family for the greater part of each week. And the problems with which he has to deal change constantly from teacher to teacher. In his efforts to provide this service, he has to travel in all kinds of weather, and is subject to all the hazards of travel on snow and ice. Much of this travel is done at night after he has been in class for two or three hours. Other factors might be mentioned, but sufficient has been said to convince even the most confirmed cynic that itinerant teacher training is a worthwhile activity, and that it is far from being the soft job which the uninitiated consider it to be. Who wants the job anyway? ★

Error Results in Mailing Clinic

A mistake by the mailing department of a Racine, Wis., firm in preparing a bulk mailing which cost it a lot of money has resulted in the formation of the first postal classification and rate clinic to be conducted by a vocational school in the country. Personnel from the mailing divisions of various firms in the city attend the ten-week sessions which are conducted by Racine postal officials, according to Alton D. Hill, director of the Racine School of Vocational and Adult Education.



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News

HAPPENINGS IN INDUSTRIAL EDUCATION

VE in Latin America

PROGRESS in training vocational-education leaders in Latin America has been reported. Last fall, from September to December, 39 industrial training directors and administrators from 15 Latin American countries completed a special three-month course at Rio de Janeiro, Brazil, organized by the National Industrial Training Service of Brazil with the aid of the UN Technical Assistance Program, through the ILO, one of its affiliated agencies.

The Rio de Janeiro Institute, one of the first of a series to be held, included such topics as organization of industrial training; functions of administration and supervision; practical problems in planning and organizing school shops; staff personnel—selection, training, and organization; and student personnel—guidance, placement, and follow-up.

Much of the instructional material for the institute, including books, pamphlets, training aids, etc., came from sources in the U.S.

The institute was the outcome of an Inter-American Seminar on Vocational Education held at the University of Maryland during the summer of 1952.

Iota Lambda Sigma Officers

W. L. NEWTON, director of vocational education at Meridian, Miss., is the new president of Iota Lambda Sigma, professional industrial-education fraternity. He was elected at the recent annual meeting in Chicago.

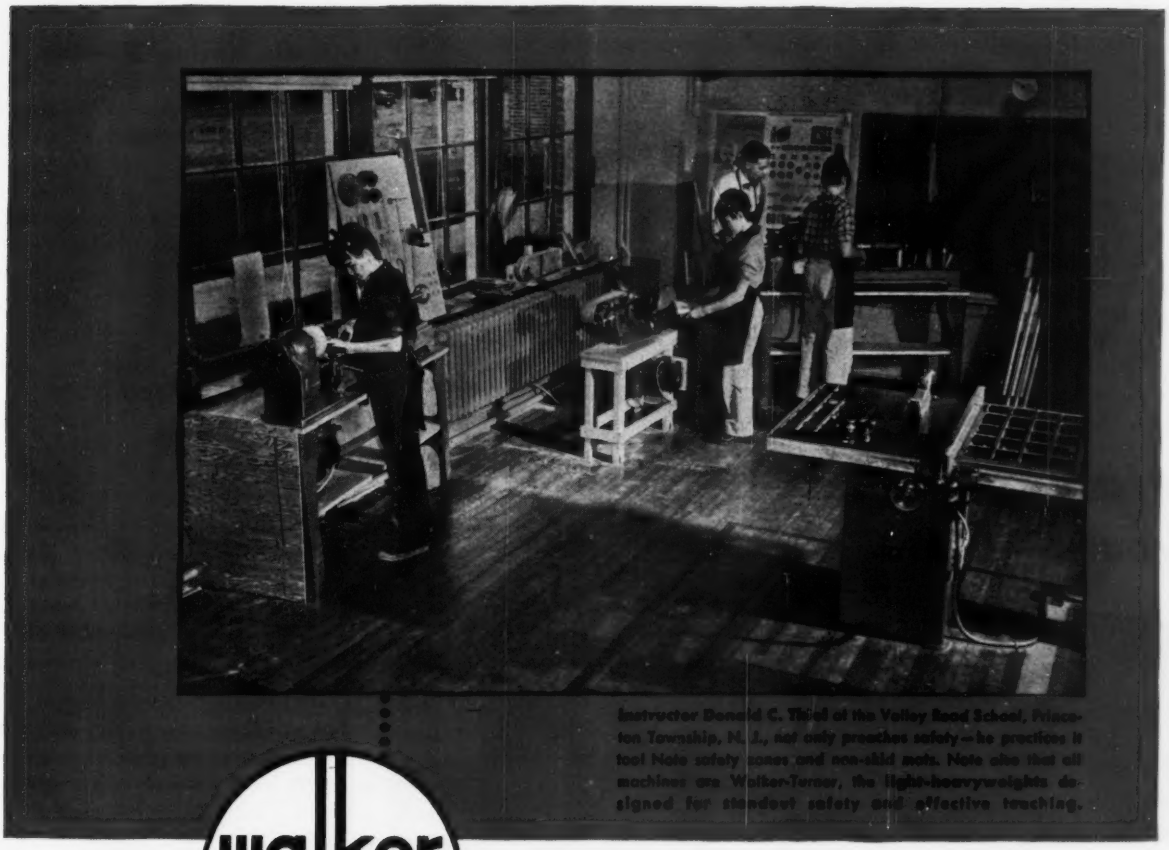
Ammon Swope, professor of industrial education, Purdue University, was named vice-president for the coming year; and Clyde H. Wilson, professor of industrial-education at the University of Tennessee, was reelected secretary-treasurer.

Ohio IA Convention

"BETTER PUBLIC RELATIONS" will be the theme of the Ohio Industrial Arts Association convention to be held March 25-27 in Columbus. A special conference of supervisors and teacher-trainers will be held Thursday, March 25.

William R. Mason, supervisor of industrial arts in Cleveland, is president of the association this year. D. C. Eaton of Swanton, is vice-president; Theodore F. Paige of the department of industrial arts, Ohio University, is treasurer; and Don Kinnaman, Lakewood, is secretary.

(Continued on page 24)



Instructor Donald C. Thiel of the Valley Road School, Princeton Township, N. J., not only preaches safety—he practices it too! Note safety cones and non-skid mats. Note also that all machines are Walker-Turner, the light-heavyweights designed for standout safety and effective teaching.

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perfect for Students... and Budgets, too!

They Fit the Students. Here Mr. Thiel took a standard Walker-Turner jig saw, less base, and made a low stand with a seat to permit use by 5th and 6th grade students. Flexibility and adaptability of Walker-Turner machines make it easy to instruct all classes — from beginners to graduates.

Here's something new and better in industrial arts education! These new Walker-Turner machines are far heavier and more rugged than "hobby power-tools". They're *light-heavyweights* built to highest industrial standards. They give your students the "feel" of heavy factory machines – introduce them to industrial machine accuracy and high production capacity coupled with ease of operation, dependability and standout safety engineering... all without the necessity for heavy machine investment.

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Safety Speakers

A LIST of speakers on safety-education subjects has been compiled by a committee of the Safety Education Supervisors section of the National Safety Council and is now available free to schools.

The 37-page mimeographed list contains the names of 185 qualified speakers in 34 states, arranged geographically, along with the subjects in which the speaker is qualified, the type of audience preferred, and tentative terms.

Copies of the list are available from the School and College Division, National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill.

Golden Anniversary

THE North Dakota State School of Science, which has as its motto, "Where Students Learn by Doing," recently observed the 50th anniversary of its founding in Wahpeton, N. Dak.

The School of Science actually is three schools in one—a business school, a junior college, and a trades school—all independent but interlocking to provide students with the combination of courses they desire. The school offers training in nearly 100 different vocations, concentrating on one- and two-year courses. E. F. Riley has just retired as president of the School of Science and G. W. Haverty, director of the trades school, has been named to the presidency.

Indiana Spring Meeting

DEWEY F. BARICH, manager of Ford Motor Company Industrial Arts Awards, will be the main speaker at a spring industrial-arts conference for teachers and students of Indiana to be held at the Ball State Teachers College Industrial Arts Department, Muncie, Ind., on February 26. Sectional meetings and shop demonstrations will follow the main session.

N. C. Officers Named

FRANK BRILEY of Raleigh, N.C., has been chosen president of the North Carolina Industrial-Arts Association for this year. He succeeds Claude Belle, of Charlotte Central High School.

Tom J. Haigwood of Charlotte Technical School is vice-president, Marshall L. Schmitt is secretary-treasurer, and K. C. Sinclair of Charlotte Central High School is public-relations chairman.

More Protection

TEACHERS of industrial education in the state of Illinois may receive added protection against law suits as a result of a new bill in the state legislature. A House bill gives the school board discretionary power to insure its agents, employes, teachers, officers, or members of the supervisory staff against any loss or liability resulting from a wrongful or negligent act while at their duties.

Wall Charts for the School Shop

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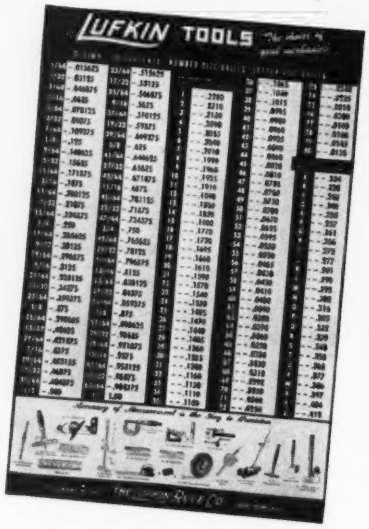

How To Read A Micrometer WALL CHART

Interesting illustrated wall chart explains the subject in concrete terms. 22 inches wide, 17½ inches high.

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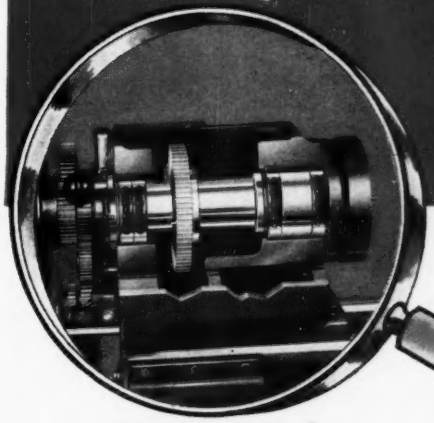
Convention Calendar

California Industrial Education Association, Fresno, March 12-13.
New Jersey Vocational Arts Association, Asbury Park, March 18-20.
American Industrial Arts Association, Hotel Statler, Los Angeles, Calif., March 23-27.
Indiana Industrial Education Association, French Lick Springs, March 25-27.
Ohio Industrial Arts Association, Neil House, Columbus, March 25-27.
Texas Vocational Association, San Antonio, April 1-3.
Illinois Vocational Association, Springfield, April 8-10.
Michigan Industrial Education Society, Civic Auditorium, Grand Rapids, April 8-10.
New York State Vocational and Practical Arts Association, Hotel Statler, Buffalo, April 8-10.
Missouri Industrial Education Association Spring Conference, University of Missouri, Columbia, April 16-17.
Connecticut Industrial Arts Association, Teachers College of Connecticut, New Britain, April 23-24.
Pennsylvania Industrial Arts Conference, State Teachers College, California, April 23-24.
Colorado Vocational Association, Colorado A & M College, Fort Collins, June 21-25.
International Graphic Arts Education Association Conference, University of Colorado, Boulder, July 4-8.

Close-Up Look Tells Why... THE NEW 12" SWING LOGAN LATHE

DELIVERS PLUS PERFORMANCE



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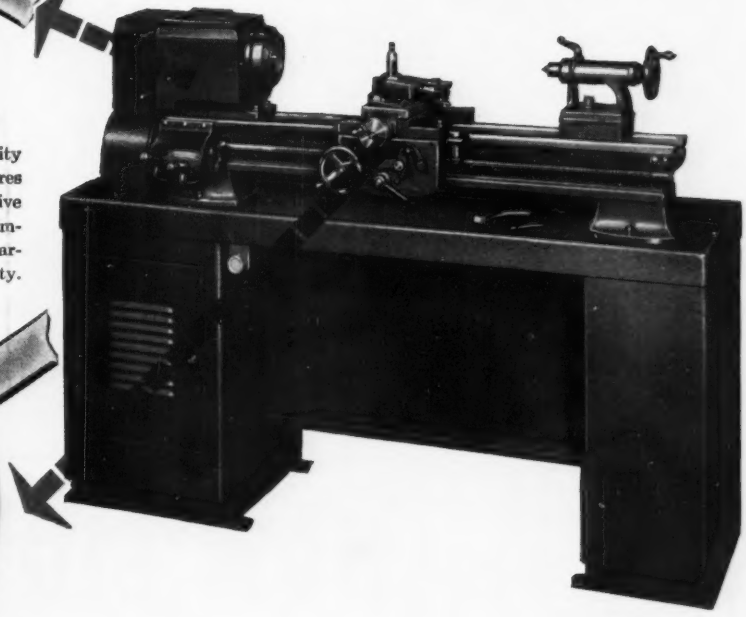
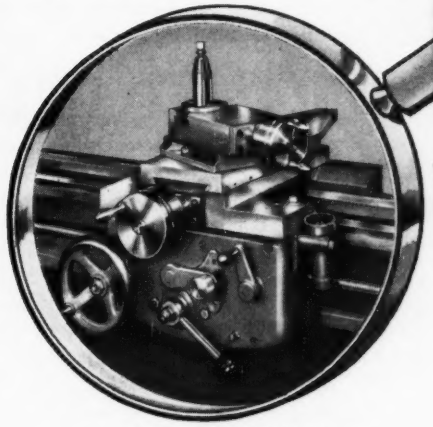
Is Massive, Rigid, Convenient

Massively proportioned spindle means extreme rigidity on heavy cuts. Oversize ball bearing mounting assures sustained spindle accuracy. Outboard V-belt drive transmits power with maximum efficiency and simplifies belt changing or adjustment. Accessible gear-shift knobs add to operating convenience and safety.

For Production, Maintenance, Tool Room or School Shop





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The closer you inspect this new 12" swing Logan Lathe, the *better* it looks. The advanced design of individual parts, and the precision construction throughout become more evident. You will like the size, too. Its 35" center distance, 1⅜" spindle hole, 1" collet capacity, and rugged, massive proportions mean extra capacity, stability and power. Keep this newest Logan in mind as you make plans for your production line, tool room, shop, or student training program. The quality you see in your close-up look will serve you well through extra years.

SEE IT AT YOUR LOGAN LATHE DEALER'S, OR

Write for Information...

Full catalog descriptions and price information on request.

Write today to

Logan ENGINEERING CO.
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Brief Specifications of Logan 12" Lathes

Swing over bed and saddle wings, 12"...Center Distances, 23" and 35"...Turret Lathes Models have 43" bed length ...1⅜" spindle hole...1" collet capacity...16 spindle speeds, 38 to 1260 rpm.

LOOK TO LOGAN FOR BETTER LATHES AND SHAPERS

School Shop KINKS

Payment will be made for each Kink published. Send to Editor, School Shop, Ann Arbor, Mich.

Weak Links Protect

One of the greatest worries of a shop teacher is the potential danger of serious damage to his machines from improper or careless operation by the students. To lessen this danger, most machines can be altered to provide a weak link that will break or burn out before the more critical parts are damaged.

The engine lathe requires two weak links for maximum safety, both of which make interesting projects for the students to construct.

The first and most important is to replace the tumbler gears with some material softer than the original steel. Micarta or Formica is sufficiently strong to withstand severe use, yet will strip the teeth if any part of the feed mechanism becomes jammed. An additional advantage of using the soft tumblers is the reduced noise when the machine is running at high speeds.

When making the replacement gears, don't be fooled into making both of the tumbler gears the same size. There is generally a difference of two teeth in the size of the gears, even though at first glance they look the same.

The second weak link required for the engine lathe is the back gear. It should be weakened in such a way, however, that only a small amount of work is required to restore it to operating condition again. The best way to accomplish this is probably to remove the back-gear drive key from the shaft so that the large gear turns freely on the shaft. Drill a hole through the hub of the gear and the shaft and insert a brass pin for driving in much the same manner as the shear pin in an outboard motor propeller.

If a witness mark is put on the gear hub and the shaft when the pin is in place, then if the pin should shear, the gear and shaft can be lined up and the three broken parts driven out and replaced with a minimum of effort.

Protecting machines in this way can reduce lost time and money to a nominal figure when an accident happens.—*Glen M. Larsen, Santa Ana, Calif., College.*

Pulling a Proof

There are several pertinent points to be presented in connection with the teaching of "Pulling a Proof" in the print shop. Among them are the following:

I generally instruct my pupils to place the galley in such a position on the proof press that the job will be more or less near the center of the bed of the press. If it is a large job, we place the galley itself near the center of the bed. If it is a small job, we place the galley near the far left corner of the bed so that the job itself will be close to the center of the bed.

In inking the job, we lift the handle of the brayer by placing the right hand, palm up, under the handles, thus lifting it to a vertical position. We wrap our four fingers and thumb, fist-like, around the handle in the same manner in which we might grab a broom handle or bat. (In a recent picture in SCHOOL SHOP the boy had his palm over the handle, instead of under, with the handle tilted instead of upright; this could result in the prong—at the juncture of the handle and flanges—scratching the job.)

In applying ink to the job we emphasize the fact that the brayer should be rolled up and down over the form, never across. This rule is not too important if the job is locked-up in a chase, or even if it is locked-up in the galley or on the bed. But if the job is merely tied-up, it is important in order to pre-

Diamond (Hand Clamp) Power Cutter
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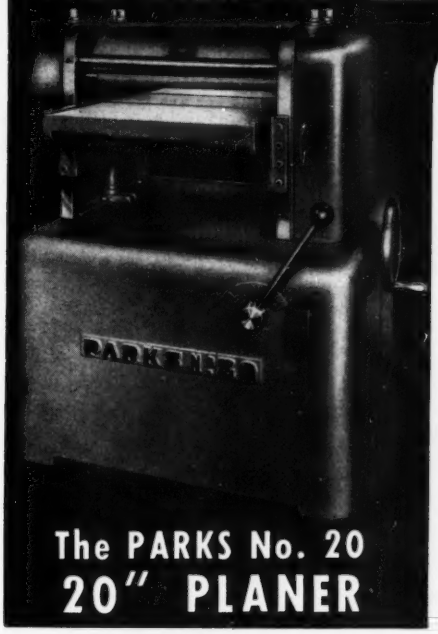

The PARKS No. 20
20" PLANER

Students advance quickly on Parks Planers because they find them easy to operate, safe, and accurate. And, since both the Parks 12" and Parks 20" Planers have been designed and precision-built for accuracy and high-speed line production in industry, they are ideally suited for the school shop because they give practical experience on the type of machines your students will eventually use. Both machines are priced low enough for even the most modest shop budget.

The Parks No. 20. 20" Planer has a 4-knife cutterhead with a speed of 3600 R. P. M. and offers two feed speeds—20 and 40 F. P. M., and 40 and 80 F. P. M. Will take work up to 20" wide by 6" thick. Ruggedly built for vibrationless operation.

The Parks Heavy-Duty 12" x 4" Planer. A compact, sturdy thickness planer that offers mill planer precision at low price. Has feed speed of 16 F. P. M. at 4000 R. P. M. Will handle material as short as 6" and as thin as 1/16".

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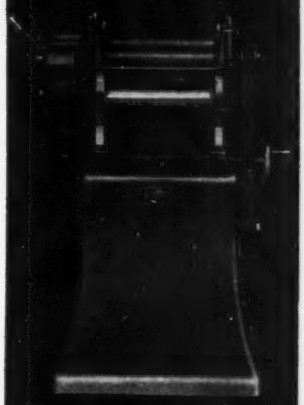

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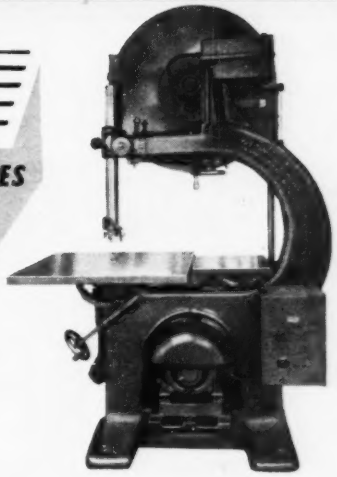
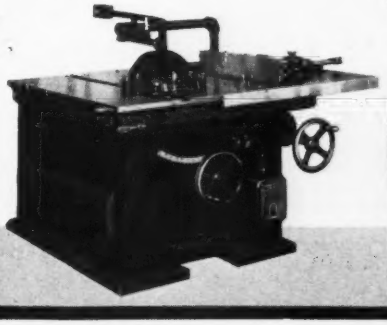
Smooth and absolutely vibrationless in operation, with wheels thoroughly guarded and equipped with synchronized two-wheel brakes which automatically apply and instantly stop the machine in case of saw blade breakage. The finest and safest band saw made. Widely used in industry for cutting both wood and metal — and the best possible bet for shop training. For complete details write for Bulletin "GE". Our line contains band and mitre saws to fit every logical budget, built by sawing machinery specialists.



MODEL "JDR" DOUBLE REVOLVING, TILTING ARBOR SAW BENCH

Carries two instantly interchangeable saws or other cutterheads on tilting arbors. Only one motor runs at a time. Automatic electric brake stops saw when current is shut off — no accidents can be caused by coasting saw. Write for Bulletin "JDR". Get the complete facts concerning this favorite of schools that want the best. We will gladly consult with you on your sawing requirements.



ARBOR YOKE

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The TANNEWITZ WORKS
GRAND RAPIDS, MICHIGAN

vent the brayer from pulling any letters out of the form, or from pushing the type lines off their feet.

We also follow this rule in wiping the form with a rag or brush after the proofs are made. The pressure of a rag—and most certainly, a brush—can easily push the type off its feet.—*Samuel C. Seegay, McKinley Junior High School, Brooklyn, N.Y.*

Locking the Spot Welder

In order to keep unauthorized persons from using the spot welder in my shop, I drill a hole in one of the prongs of the connector plug. Then I pass the shackle of one of the smaller size padlocks through the hole and lock it, making it impossible to insert the plug into the receptacle.

The hole should be only slightly larger than the shackle so as not to weaken the prong.—*Neil Helgeland, Richland, Washington.*

No More Loss of Rules

Most teachers of industrial education know the value of chaining the chuck key to the drill press or the portable electric drill. I have an additional use for the safety chain in my shop. I have found it very helpful in keeping track of the 6", quick reading steel rules.

A hole is drilled in one end of the rule (preferably on the 6" end) with a 3/16" hard steel drill. This can be done without damage to the heat treatment of the rule. If the drill tends to raise a burr on the rule, it can be removed with a mounted point held in the drill press.

Next, two rings are cut from a 3/32" diameter welding rod that has been bent around a 1" piece of round stock (or around any other suitable diameter). Then a strip of brass 1" wide and 6" long is cut and a 3/16" hole is drilled in one end. Next, a length of safety chain 12" long (or any other suitable length) is cut.

Assemble a ring through the rule and one end of the chain. Braze, weld, or solder the link closed. Repeat for the other end of the chain and the brass strip.

This makes a combination that does not permit the student to walk around the shop unconscious of the rule in his pocket. Also the chain and the strip of brass is quickly and easily seen in inconspicuous places where tools are prone to fall.

There has not been a lost or misplaced rule in my shop in two years.—*Walter E. Bandlow, Shaw High School, East Cleveland, Ohio.*

Chalk Breakage

In order to strengthen chalk against breaking try wrapping it with masking tape. Start the spiral at the thick end of the stick so that the tape can be unwound and torn off as the chalk wears.—*Stanley Clark, East Bradenton, Fla.*

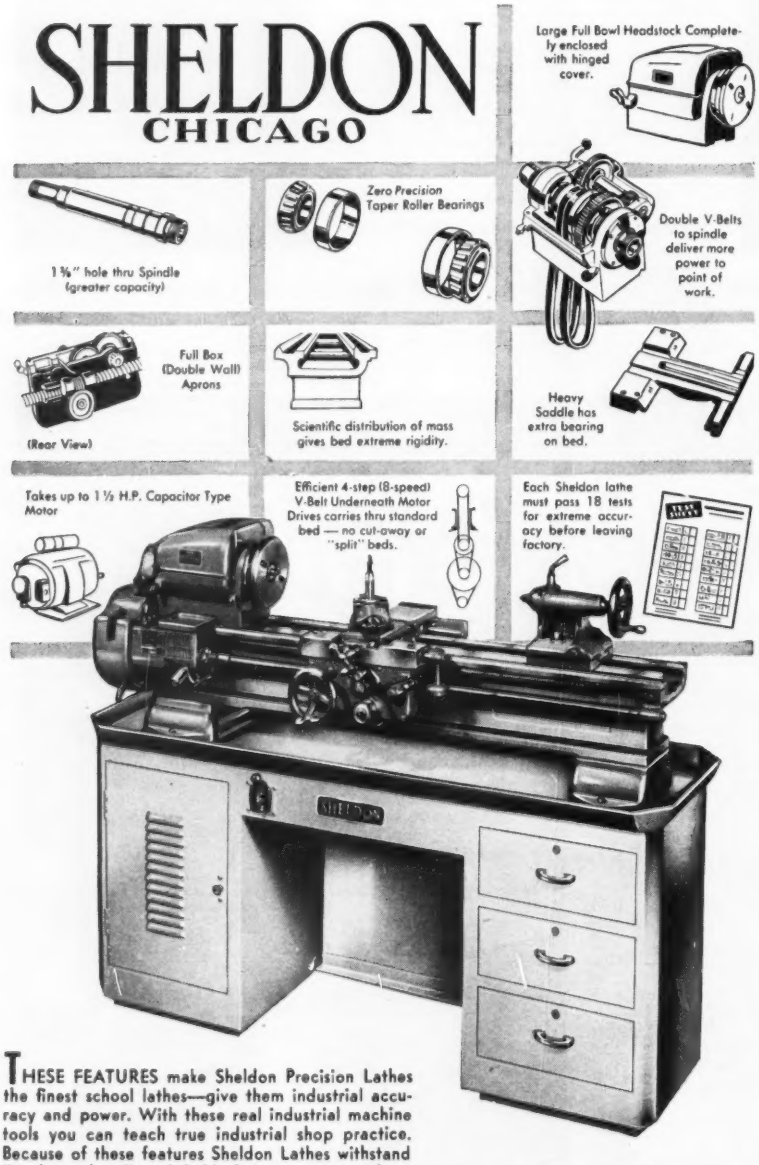
Brush Cleaning Set-Up

Kerosene makes an inexpensive brush cleaner. Two one-gallon cans marked KERO and two cans marked DIRTY make a convenient set-up in the school shop.

When a brush is to be cleaned, kerosene is poured from the KERO can into a small can or cup and the brush is worked in it to thin out the paint or varnish. The brush then may be washed with warm water and soap. The kerosene in the cup is then put in the can marked DIRTY.

When the first gallon of kerosene is used up, the second KERO can is put in its place and the gallon of DIRTY kerosene is set aside overnight to settle. In this way the kerosene may be reused many times.—*Robert S. Tupper, Canton, S. Dak., public schools.*

SHELDON
CHICAGO


Large Full Bowl Headstock Completely enclosed with hinged cover.
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1 ⅝" hole thru Spindle (greater capacity)
Double V-Belts to spindle deliver more power to point of work.
Full Box (Double Wall) Aprons
(Rear View)
Scientific distribution of mass gives bed extreme rigidity.
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Takes up to 1 ½ H.P. Capacitor Type Motor
Efficient 4-step (8-speed) V-Belt Underneath Motor Drives carries thru standard bed — no cut-away or "split" beds.
Each Sheldon lathe must pass 18 tests for extreme accuracy before leaving factory.

THESE FEATURES make Sheldon Precision Lathes the finest school lathes—give them industrial accuracy and power. With these real industrial machine tools you can teach true industrial shop practice. Because of these features Sheldon Lathes withstand "student abuse" and hold their accuracy without constant bearing maintenance. They are safe for students to operate.

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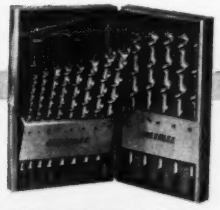
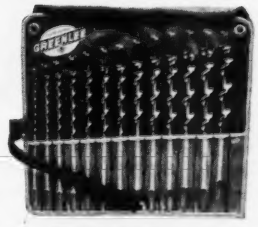
for fast, clean boring

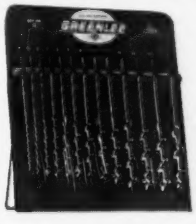
GREENLEE 22 SOLID-CENTER AUGER BITS make good workmanship come easy. Smooth, *accurate* holes are bored swiftly because solid-center design gives extra strength and provides positive, fast chip clearance. Correctly formed screw point and cutting edges last through long use. "Induction Heat-Treated" for uniformity, long life . . . "Plastic-Sealed" to reach you factory-sharp. Buy singly or in sets, as shown below.



Set of 13 bits in steel box. Hang up or stand on shop bench.



Sets of 6, 8, 9 or 13 bits in plastic roll. Grommets for hanging up.



Set of 13 bits with convenient metal holding panel. Easel for standing up. Holes at top for hanging.

TOOLS FOR CRAFTSMEN

GREENLEE

FREE FOLDER gives details on GREENLEE 22 Solid-Center Auger Bits and other fine hand tools in the GREENLEE line. Write Greenlee Tool Co., 2042 Twelfth St., Rockford, Ill.

Train them on a saw they'll use in Industry

. . . WELLS No. 5 Metal Cutting Band Saw

HERE'S a utility, metal cutting band saw that *will handle* all the horizontal *cut-off jobs around the school shop.* Here's a band saw that *will develop the basic skills* necessary to operate industry's most technical cut-off saws. Most important of all, here's the band saw that *your students will use time and again in industry.*

The same features that have made the Wells No. 5 so popular in industry make it ideal for the school shop. Its functional design provides for efficient and easy operation. It is ruggedly built to increase productivity and trim cutting costs. Moderate initial cost and low maintenance add to the money saving features of Wells Saws.

Write for complete information or a shop demonstration.

Illustrated above, the No. 5—all purpose utility saw. Capacity: 5" x 10", rectangular; 5" dia., rounds. Blade width, ½ or ⅝". Constant-load blade tensioning control. Four selective speeds. Shown with wet cutting system.

Wells Saws

Wells

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Save space with this

Fold-Up House Wiring Panel

By Hugh Fairbairn

Cloquet, Minnesota, Public Schools

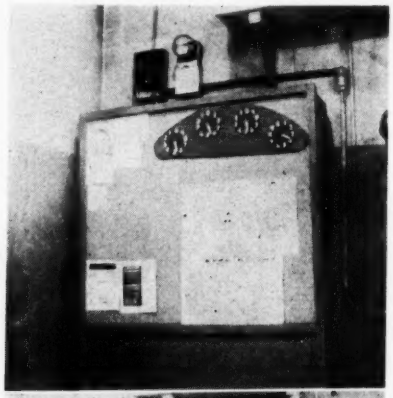
AN interesting innovation in the teaching of industrial-arts electricity is our fold-up house wiring panel at Cloquet, Minnesota. Its value comes from its compactness. By the use of this panel we are able to provide unit-shop facilities in our crowded general shop. The idea has won the approval of the architectural firm planning our new school building addition and provisions are being made for this to be a part of the regular shop design.

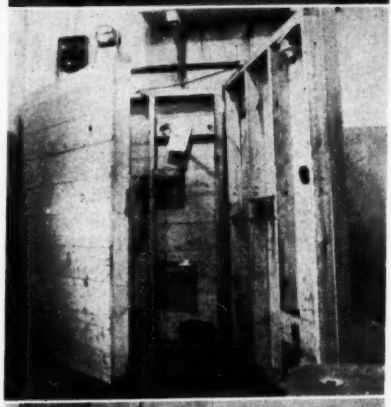
Instead of a cumbersome frame structure for house wiring, this panel is a studded framework with one wall attached to the main shop wall. Two other walls are attached to this one in such a hinged manner that they can be folded up into a space protruding out into the room only 14". In the extended position the panel provides a three-sided room 6' square and 6' 6" high. The panel can be folded up at the end of the period so that a metalworking or other class may come in and make use of the same shop space.

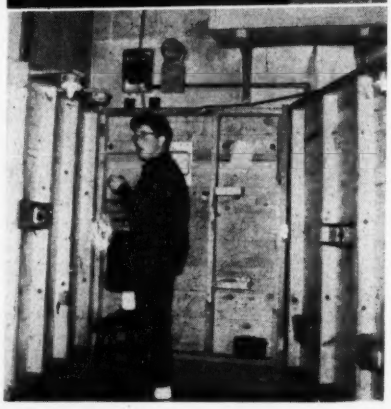
From the instructional standpoint, the realism of providing a meter and a service-entrance switch box with 110-220-v single-phase electricity gives the student the opportunity to perform jobs that are similar to actual house wiring. The student can be required to wire a ceiling light controlled by a single-pole flush toggle switch. Next he might be asked to control two lights from one switch or incorporate a base receptacle into the circuit. As the student progresses, three- and four-way switches give him the experience of controlling a light from more than one location.

I have found that wiring according to the national underwriters' code makes the student conscious of safe wiring for the home. The experience of using romex, B-X armored cable, and conduit in wiring from a service-entrance switch box to outlet and switch boxes can lead into the teaching of considerable related information about fusing, wire size, wattage, etc. One of our interesting hook-ups is 220-v wiring to a simulated stove or heater.

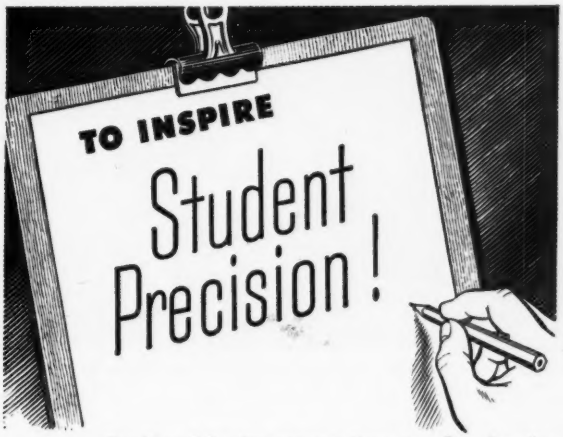
I believe that many shop teachers will find this fold-up wiring panel innovation sound enough in principle to incorporate into their shop facilities. The pictures illustrate the simplicity of construction. Our original cost as a piece of shop equipment was reasonable and local firms have been very generous in giving us scrap wire. After five years of using it as a teaching device, I find that it works admirably. Moreover, what other piece of shop equipment provides bulletin-board space when not in use? ★







TOP—Panels folded together take up little space. Outer unit is used as bulletin board.
CENTER—Panels are hinged together with casters on outer edges for extra support.
BOTTOM — Regular stud construction gives student same problems as in house model.



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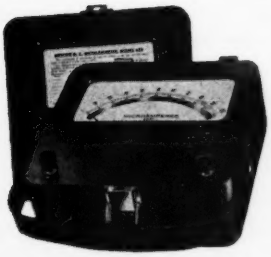

Ultra sensitive instruments of the double pivoted type requiring no leveling when used in horizontal position. Combine high accuracy and a 6.1 inch scale . . . ideal for precise measurements of potential and current at very low energy levels. Available as d-c voltmeters, millivoltmeters, milliammeters and microammeters; electrolysis volt-millivoltmeters and high resistance voltmeters—also as a-c rectifier type instruments and as thermocouple ammeters, milliammeters and voltmeters.

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A clamp-on volt-ammeter built to Weston standards of safety, accuracy and dependability. Five full scale a-c current ranges of 1000/250/100/25/10 amperes with range overlap. Three self-contained a-c voltage ranges of 700/350/175 volts—insulated for 750 volts. Has convenient 6 position switch easily operated by thumb—adjustable pointer stop facilitates measuring starting current of motors.

WESTON

WESTON *Instruments*

EVERY SCHOOL SHOP NEEDS THIS EQUIPMENT

FOR ADDING METAL SPINNING

If you have a good lathe in your shop, a few Boice-Crane spinning tools and accessories permit the instruction of metal spinning. If you have no lathe, Boice-Crane can supply a gap-bed lathe as well as the spinning tools. In any event, you should send for Boice-Crane's FREE instruction book on Metal Spinning.

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Safer! Always cut true, original shape and dimensions. Improved clearance for high speed shaping throughout the 50% longer life of the cutter. Less cutting edge crumbling than straight relief cutters. Precision formed from uniformly deep-hardened fine tungsten tool steel. Razor sharp. Authentic pattern individual cutters and sets for all cabinet work, mill-work, windows, storm sash and doors.

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End tool sharpening troubles with the

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DUAL WET GRINDSTONE

Any student can operate without the slightest danger of drawing the temper of costly shop edge tools, as so frequently happens with high speed dry grinders. Consists of two complete grinder units, one coarse standard Ohio sandstone wheel, and one high quality extra fine grain Arkansas-type wheel, driven by a single double shaft motor.

Constant speed. Positive, spring-loaded friction drive automatically speeds up the stone as stone wear occurs through use. The only grinder which by maintaining near-constant peripheral speed, guarantees the last grind on the stone to be as efficient as the first.

Grinds wet, but operator stays dry. Don't compare "Friction-Matic" with wet grindstones that throw water. Rubber friction roll drive automatically squeegees excess water from the wheel.

Comes complete with two grinding units, bench base, V-belts, V-pulleys and double end shaft ½ H.P. motor for 110-V, 60 cy., 1 phase, A-C. Shipping weight 90 lbs. Six other single unit models.

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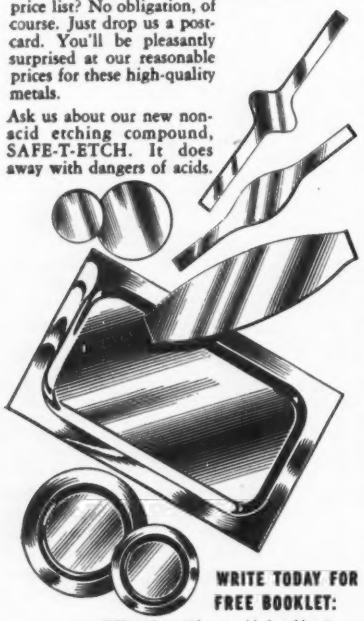

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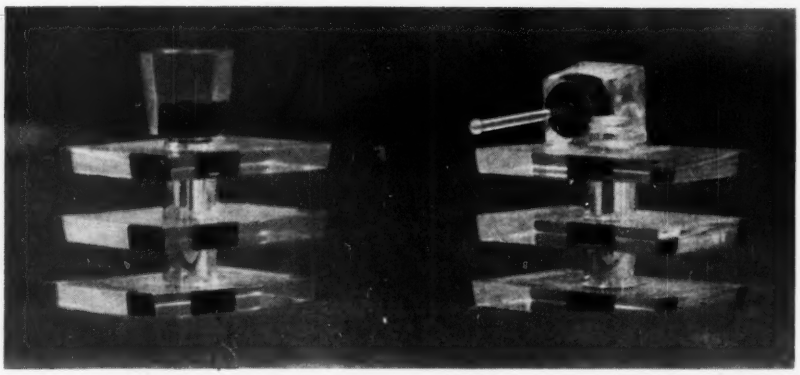


A glass bottle with an applicator forms the center of this plastic project which has an interesting color scheme based on the refraction properties of the acrylic plastics.

Here is an ideal gift item

Plastic Perfume Bottle

By Andrew R. Kosher

Kingston Vocational School, Kingston, Pa.

A PERFUME bottle made of acrylic plastic is colorful, useful, and decorative for the vanity or dressing table. It offers an opportunity for the pupil to apply the principles of creative design. Many different types of perfume bottles may be designed and fabricated from this material whose jewel-like depth adds brilliance to the appearance of the project.

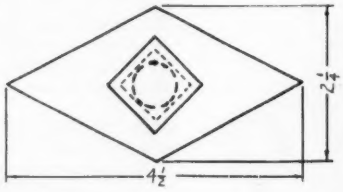
The ease of fabrication removes the necessity for elaborate equipment or complex machinery. Because of this, the design shown in the picture is presented here as a practical shop project. The pupil will take pride in this article since it makes an ideal gift which will add beauty to the home. The variety of colors available in acrylic plastics permits the selection of a color that will match the furniture in any home.

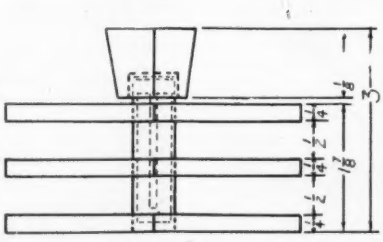
The project shown here was built around a glass bottle $\frac{5}{8}$" in diameter and 2" high. Holes, $\frac{1}{16}$" smaller than the size of the bottle, were drilled in the centers of the three pieces forming the three levels of the project. After these pieces were polished they were heated to a temperature of from 250°F. to 350°F. By this means this type of plastic is softened and makes it possible to force the pieces over the bottle. It is advisable to use wood spacers between the parts when squeezing them into place, as this will help to keep them parallel.

The same procedure is followed in squeezing the plastic on to the cap from the bottle.

In the bottle shown here, paint was applied only to the inside of the holes through which the glass bottle was pressed. The optical qualities of the plastic make it appear as though the paint was applied to some of the outer edges of the plastic.

Mother or girl friend will welcome this attractive item as a gift. ★





Bill of Materials

No. of pieces	*Name*	*Materials*	*Size*
3	Body	Clear acrylic	4½ x 2¼ x ¼
1	Top	Clear acrylic	1 x 1
1	Bottle	Glass, clear or plated, any color	⅝ od
1	Cap	Hard rubber or plastic with applicator	To fit bottle

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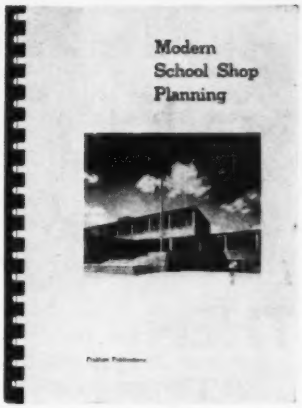

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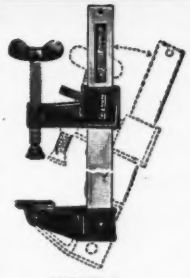

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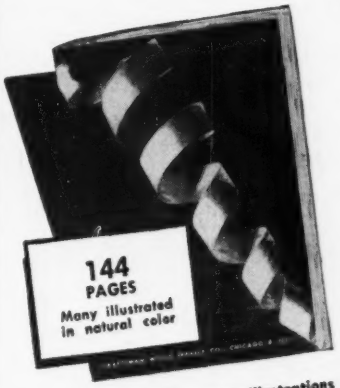

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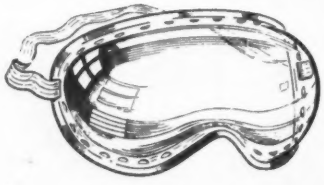

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Mr. Tempestini, the noted Italian designer, has utilized metal for the basic framework of the chairs and table but has softened the usual effect of the metal through the use of wicker and upholstered cushions. The backs of the chairs are of Italian wicker in a natural finish. Note the convenient cut-out for easy portability. The seat of the tub chairs is of metal mesh and the loose box cushion is kapok filled and covered with a colorful print.

The table base is of metal and the top is 7/16" crystal in a triangular shape. The long side measures 52" while the other sides are 43½". Note how the corners of the table are gracefully rounded.

The grouping is admirably designed for its primary purpose: intimate dining. ★

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to publicize your industrial-education program

Barbecue for Dads

IF you have the students boosting your industrial-education program in school and their dads boosting the program out of school, how can you lose? At least that's what the industrial arts department at Enterprise Junior High School, Compton, Calif., apparently thought.

The department recently sponsored a Dad's night in the school. All students enrolled in the industrial-arts classes were invited to bring their dads to an evening meeting that included dinner prepared on the new barbecue that was designed and built by the industrial-arts students.

After dinner everyone visited the shops and then viewed some of the films used as instructional aids in the industrial-arts department. The program was enthusiastically received, reports the *California Industrial Education Association News.* ★

Let Us Hear from You

SCHOOL SHOP is always seeking good items for its columns such as short public-relations ideas like the above, teaching kinks, and longer articles on machine shop, radio, plastics, ceramics, and other topics. Ask us for a copy of "Pointers on Writing for SCHOOL SHOP."

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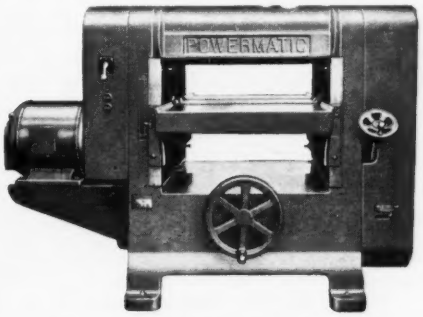

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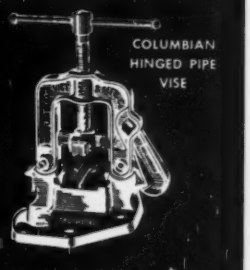
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IN THE *Morning Mail . .*

[Brief comments about SCHOOL SHOP and the field it serves are invited. Address the Editor, SCHOOL SHOP, Ann Arbor, Michigan.

Gentlemen,

I have read Dr. Wilber's interesting articles from time to time. They are valuable and we can quite agree with the philosophy, though most of us use somewhat different terms. However, he weakens his articles when he belabors instructional units. I doubt that he would personally be without them in his shops. They show up in his colored slides. To be without them would make hodge-podge of our industrial-arts shops.

The impression is given that Wilber has not studied the literature on analysis and does not understand the purpose of operations and information topics. Available literature presents them as means and not ends. They serve with other factors in making contribution to the realization of aims.

Verne C. Fryklund, President,
The Stout Institute,
Menominie, Wis.

Gentlemen,

I read with considerable interest your November issue. I was particularly interested in the lead-off article, "Must T & I Teachers Be Tradesmen?" by A. A. Vezzani. I think that the procedure which he describes is being used in several states. I know a similar plan is being used by the Wisconsin State Board of Vocational and Adult Education to determine trade competency. Certainly a person who is competent as a tradesman should not be excluded from vocational and technical teaching because he has not had an apprenticeship, if he is otherwise qualified. . . .

Roy R. Van Duzee, Director,
Vocational and Adult Education,
West Allis, Wisconsin

Gentlemen,

The article, "Must T&I Teachers Be Tradesmen?", in the November issue appears to be another attempt by industrial-arts persons to move into vocational education.

The article, in effect, states that the avenue of progression in organized labor, *apprenticeship*, is not a prerequisite for *trade skill*, and that journeyman's experience is not necessary to perfect such skill. . . . If the author has had the required trade experience for T & I teaching, does he honestly believe in his own article? It appears that his acquaintance with teachers of T & I is extremely limited. Does he know the difference between an "operator" and a "mechanic?"

Rudolph J. Prager, Paul Wagner, William A. Hoefener, Dominic Potenza, G. L. Carlson, Otto A. Blaschke, Vocational Teachers,
New York City, N. Y., Schools

[EDITOR'S NOTE: Some of the answers to the above questions will be found on page 16 of this issue.]

Gentlemen,

I have carefully reviewed the article entitled, "Must T & I Teachers Be Tradesmen?" which was presented in the November issue of SCHOOL SHOP. This is an old argument and I fail to see any new points of view in the article. I do think that the author has answered his own question when he states, "We have many industrial-arts teachers with trade experience who are qualified. . . ." Most certainly if they have the necessary trade qualifications, that is all that is necessary.

In vocational education as I know it there is no substitute for experience. A prospective teacher either has it or he does not have it, the fact that he has been in industry notwithstanding.

We have always found it difficult to secure good industrial teachers in West Virginia. This is shown by the fact that we have been searching for a full five years for an individual who can teach a class of 24 boys in the maintenance and repair of coal-mining equipment. If the author of this article knows of a good industrial-arts man who could fill this position, I would be greatly indebted to him for the information.

Okey E. McCourt, Supervisor,
McDowell Vocational School,
Welch, West Virginia

Gentlemen,

At our recent meeting of the Los Angeles County Industrial Education Association Executive Council I made comment on the down-to-earth classroom use of your publication, noting informally in our meeting how directly useful the material is to us as shop teachers. Immediately the others spoke up to voice more praise of SCHOOL SHOP. We then decided unanimously that a note of thanks was in order. So accept this note, please, as just a friendly clap on the back, as a word of congratulations. The magazine is well done. Keep up the good work. We enjoy reading and anxiously await the periodic helps we receive from SCHOOL SHOP.

Norman R. Stanger, Secretary,
Los Angeles County Industrial
Education Association,
Arcadia, California

Gentlemen,

I wish to express my appreciation to SCHOOL SHOP for the many interesting articles and hours of professional enjoyment I have received over the past five years.

The new feature on "What the Industrial Designers Are Doing" is another step in leadership.

Robert A. Moore,
Grover Cleveland High School,
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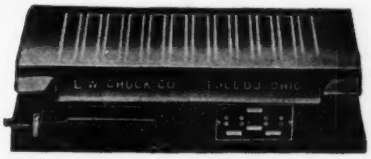

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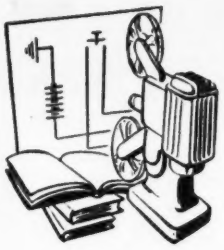

Books:

Automotive Mechanics. Heitner. New York: D. Van Nostrand Co., Inc., 1953. Pp. ix+501. $4.60.

This book is designed for use by beginners and is intended to provide them with an understanding of the construction and operating principles of the automobile.

It is organized into a number of units, each one covering one phase of the subject. Among these topics will be found one section on power, another section on bearings and lubrication, and still others on the fuel system, the cooling system, and the electrical system. As a result of this plan, each unit can be covered without reference to any of the others.

The presentation of the material is simple and practical, and, to aid in visualization, a large number of illustrations is included. In view of this the book should be useful as a text in automotive courses in secondary schools and in colleges.

Joseph Heitner is a teacher of automotive mechanics in the High School of Science in New York City.

Outboard Motors and Other 2-cycle Engines. Venk, Frazee, and Landon. Chicago: American Technical Society, 1953. Pp. viii+159. $3.95.

This book contains an authoritative discussion of the problems that arise in the maintenance and repair of the small motors found on fishing boats, motorcycles, and lawnmowers. The authors are well qualified to answer the questions that arise in the minds of individuals who operate these devices.

The book is written in nontechnical language that can be understood by the layman. This, coupled with the fact that it is profusely illustrated, makes it a desirable volume in situations where work has to be done on motors of this type. Test questions and unit organization make it useful for instructional purposes in school shops.

Ernest Venk is an instructor in auto and aviation mechanics in the Fordson High School, Dearborn, Mich. Irving Frazee is Supervisor of Technical Publications, Ford Motor Company, as well as being an author and inventor. William Landon is Promotional Service Manager with the Plymouth Motor Corporation.

General Printing. Cleeton and Pitkin. Bloomington, Ill.: McKnight & McKnight Publishing Co., 1953. (Second Edition) Pp. 195. $3.00.

The original edition of this book was published in 1941. Since that time it has been revised to bring it into harmony with recent developments. Because of this it should continue to serve as an excellent text for classes in secondary schools.

The material is arranged into 120 divisions, each one dealing with a single process. This plan does much to simplify the task of the teacher when assigning work to his pupils.

Glen U. Cleeton is Dean of the School of Printing Management, Carnegie Institute of Technology, Pittsburgh, Pa. Charles W. Pitkin is Director of Manufacturing, Doubleday & Co., Inc., New York City.

Television and F-M Receiver Servicing. Kiver. New York: D. Van Nostrand Co., Inc. (Third Edition) Pp. 320. $4.20.

This edition has been increased in size by one-third as a result of a careful revision which was made necessary by the rapid progress that has taken place in the field of television during the past three years. The book deals with the operation and servicing of equipment being used in this field. It includes chapters on antennas, receivers, test equipment, picture tubes, and many other areas of television operation.

Teachers offering work in television servicing will find it to be an excellent reference book.

Milton S. Kiver is President of the Television Communications Institute, Chicago, Illinois.

Decorative Designs. Johnson. New York: Educational Materials, Inc., 1953. Pp. 70. $3.00.

This book contains 350 original designs which are suitable for application to different types of materials. Teachers in the fields of pottery, plastics, leather, art metal work, woodwork, and jewelry will be delighted by the range of the examples given. The rich body of suggestions provided should stimulate originality, although the designs presented can be followed accurately if desired.

Frances H. Johnson is a designer and potter who has had her work exhibited in several prominent art galleries.

Applied Drawing and Sketching. Second Edition. Fleming, Barich, and Smith. Chicago: American Technical Society, 1953. Pp. 150. $2.00 (paper bound) and $3.50 (cloth).

Much has been added to make the second edition of this text more worthwhile to both the student and the instructor. New sections have been included on reading electrical blueprints and sheetmetal drawings. The sections on project planning and maps have been expanded and new illustrations have been added.

Chapters also are devoted to basic lettering forms, pictorial drawings, working drawings, house planning, project planning, graphs, and reading machine-shop and building-trades blueprints. Question sheets are placed at the

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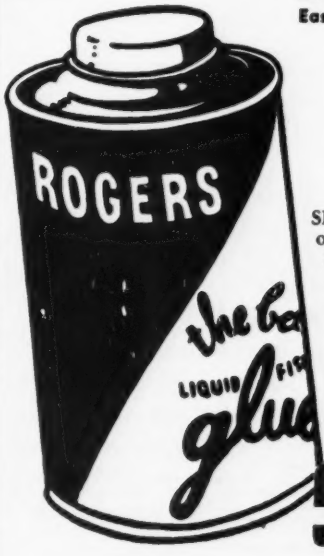

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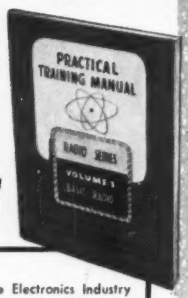

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end of each section to test what has been learned.

This book is designed as a basic drawing text that will have carry-over values to other drawing courses and to everyday living.

Technical Illustration. Brooklyn, N.Y.: Higgins Ink Co., Inc., 1953. Pp. 90. $2.50.

Three-dimensional drawing and axonometric drawing are emphasized in this book. The topic of lettering is also fully covered. The book includes 22 plates showing examples of industrial illustration techniques. The techniques, which are presented by Bryan G. Smith of Douglas Aircraft, are designed for manual illustration and visual aids departments and are novel in that one projection of one object is used throughout the series to achieve maximum instructional value.

Who's Who in Industrial-Arts Teacher Education. Williams and Bergengren, Editors. 1953 Yearbook, American Council on Industrial-Arts Teacher Education. Bloomington, Ill.; McKnight & McKnight Publishing Co. Pp. 214. $4.00.

This book contains biographies of those individuals who are engaged in industrial-arts teacher education in the United States. The list of names included is quite complete, and in most cases the information provided is comprehensive. While the Council must be credited with having done a fine job, it and the profession at large are indebted to the McKnight & McKnight Publishing Co. for doing an excellent job of printing and binding, as well as for absorbing the cost of publication.

Walter Williams and Roy Bergengren are on the staff of the University of Florida.

Pamphlets:

U.S. Navy Occupational Handbook for Men, a manual for secondary-school and college teachers, vocational counselors, librarians, and employment and youth directors, is designed to be used in guidance and orientation programs and as a classroom tool in occupations courses. This is a revised edition of the 1948 handbook. Available from the Bureau of Naval Personnel, Washington 25, D. C.

Instructional Materials in Latin American Industrial Schools is a 30-page booklet containing the report of the committee on instructional materials created by the Institute of Inter-American Affairs with the cooperation of the Pan American Union and the U. S. Office of Education. The booklet shows the needs of the Latin American industrial schools and suggestions on procedures for meeting them. Copies available free from the Pan American Union, Washington 6, D. C.

Audio-Visuals:

A Revised Educational Catalog, listing all filmstrips, 2 x 2 slides, and color slidesets for the school market has been released by the Society for Visual Education, Inc. Arranged by subject matter, the 58-page catalog has a section devoted to vocations. Available free from the Society for Visual Education, 1345 Diversey Parkway, Chicago 14, Ill.

Lithography, a 16mm black and white movie, running time 14 minutes, shows the steps required for production of a lithograph. Available for sale ($65) or rent ($4) from International Film Bureau, Inc., 57 E. Jackson Blvd., Chicago 4, Ill.

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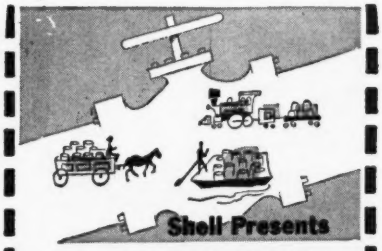

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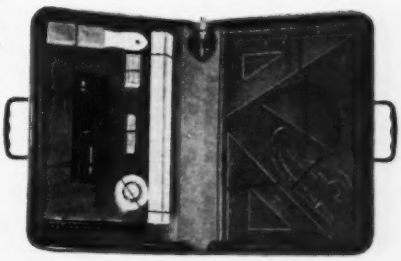

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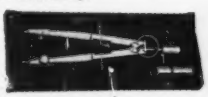

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For information and literature, schools may write to Jack Cunningham, Woodwelding, Inc., 3000 W. Olive Ave., Burbank, Calif., mentioning SCHOOL SHOP; *or circle no. F2 on the business-reply card.*

New "Tension Tip" Screwdriver Announced

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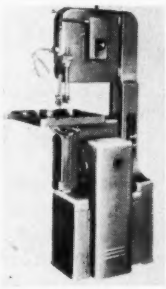

A new variable speed band saw having a speed range from 50 to 4500 surface feet per minute has been announced by Walker-Turner. According to the manufacturer, this is the first time that a 16″ band saw in the light-heavyweight class can offer such a complete range of speeds.

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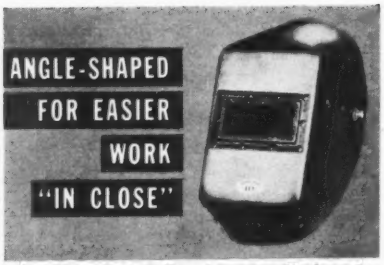

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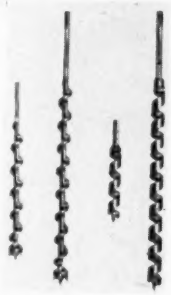
New Locking Wrench Now Being Produced

The Utica Drop Forge & Tool Corporation has announced production of a new wrench which can be used as a vise-wrench or as an adjustable locking wrench. It has a lever about 3" long which snaps over the handle and controls the jaw locking and unlocking action. A light push on the lever locks the adjustment solidly; a light push on the button at the opposite end of the lever releases it.

When the tool is used as a vise-wrench, the locking lever is moved out until the "clutch" mechanism engages the knurl. A slight clockwise turn of the lever squeezes the jaws together vise-tight. According to the manufacturer, the jaws lock so tightly that they won't slip even on rounded nuts or bolts. A reverse movement of the locking lever releases the vise-lock. This new wrench—the Utica No. 92—is available in three sizes: 8", 10", and 12". For more information write Utica Drop Forge & Tool Corp., Utica 4, N.Y., mentioning SCHOOL SHOP; *or circle no. F6 on the business-reply card.*

New Electric Drill Bits Announced

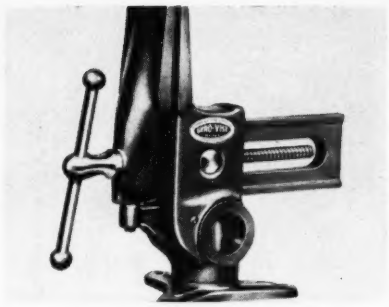


A new line of bits especially designed for use in portable electric drills is now being made by the Greenlee Tool Company. The new Greenlee bits have fine-pitch screw points to compensate for high rpm of electric drills and are completely heat-treated for extra strength. The shanks are accurately machined for precise alignment. These bits are available in wide size ranges in the following types: single-twist electric drill bits, solid-center electric drill bits, and ship-auger electric drill bits. For further information, write Greenlee Tool Co., Rockford, Illinois, mentioning SCHOOL SHOP; *or circle No. F7 on the business-reply card.*

New All-Purpose Vise

A new all-purpose vise—said to work equally well in any upright or "on-its-side" position—is announced by The Columbian Vise & Mfg. Co.

Known as Columbian Gyro-Vise No. 72½, the new vise operates from, and rotates around, a standard base which can be mounted in any desired location. Additional bases can be placed in different parts of the shop, garage, or home, and the vise easily moved



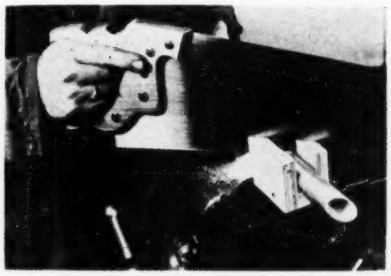
from job to job. Regardless of its position, upright or flat, the vise moves in a full circle. It locks automatically in any selected position.

Gyro-Vise jaws are 2½" wide and 4¼" deep. Maximum jaw opening is 5". The manufacturer claims that these jaws will also hold paper-thin objects securely and without marring. The vise weighs 16 lbs. For further information, write The Columbian Vise & Mfg. Co., Cleveland 4, Ohio, mentioning SCHOOL SHOP; *or circle No. F8 on the business-reply card.*

Aluminum for Home Workshops

The Reynolds Metals Company is now producing a special soft aluminum called Reynolds Home Aluminum, which is designed for the use of home or shop craftsmen. According to the manufacturer, the product is strong, yet soft enough that no damage results to any hand or power woodworking tool that may be used on it. The manufacturer emphasizes that other types of aluminum are harder, and may damage sensitive tools.

Home aluminum comes in a variety of



Sawing aluminum tubing with hand saw.

shapes and finishes: sheet (embossed or plain), rod, bar, tubing, and angle. The company has an array of items on display at its General Sales Office, ranging from simple auto oil-drip pans for the garage to nesting tables, demonstrating the versatility of the product.

Home aluminum is now being marketed generally throughout the country at building supply and hardware dealers. For a free copy of the booklet *How You Can Do Things with Reynolds Home Aluminum with Ordinary Tools* write to Reynolds Metals Company, 2500 South Third Street, Louisville 1, Kentucky, mentioning SCHOOL SHOP; *or circle no. F9 on the business-reply card.*

New Literature:

How to Glue It is the title of an informative and excellently-illustrated 32-page manual now being distributed by the Franklin Glue Company. The booklet includes information on useful woodworking joints, the use of nails and screws, the use of clamps to make gluing

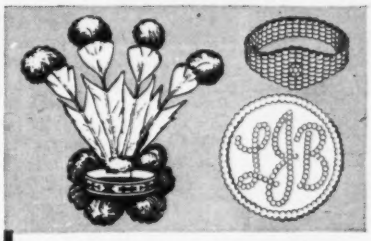
easier, gluing jigs you can make yourself, six steps for good wood gluing, and tips on applying glue. Also included is a handy chart on gluing methods (for all types of glue in common use) and a chart indicating the best types of glue to use for particular jobs. Five copies of this manual are available free to qualified industrial-arts teachers, and additional copies for classroom work may be obtained for 10c each. Write The Franklin Glue Company, 119 W. Chestnut St., Columbus 15, Ohio, mentioning SCHOOL SHOP; *or circle no. F10 on the business-reply card.* (Include 10c for each copy over five.)

Information on Chip Breakers Available. A booklet and a wall chart giving technical information on chip formation and chip breaking in the lathe-turning of metals have been published by the National Machine Tool Builders' Association. The materials were prepared by Professor Erik K. Henriksen of Cornell University; the research on which the materials are based was conducted at Cornell University under the sponsorship of 27 industrial firms. The title of the booklet is *Chip Breakers.* The wall chart is 22½" x 35", printed in four colors; it illustrates graphically the usable range and the preferred range of lathe feeds and speeds (with illustrations of types of chips produced) for three kinds of steel. The chart is titled "Recommendations for Chip Breaker Design." The price of the booklet is $.50, the price of the chart is $1.00. Copies of either or both may be secured from the Cincinnati Lathe and Tool Co., Cincinnati 9, Ohio, mentioning SCHOOL SHOP; *or circle no. F11 on the business-reply card, enclosing money with order.*

A 1954 Eico Catalog is now available. The new 12-page catalog lists and illustrates the complete Eico line of test kits and instruments. The description of each instrument is organized into "features," "specifications," and "applications." The catalog also describes Eico's engineering laboratories, its quality control department, and other facilities. For a free copy write Electronic Instrument Co., Inc., 84 Withers Street, Brooklyn 11, N. Y., mentioning SCHOOL SHOP; *or circle no. F12 on the business-reply card.*

Enameling on Copper and Other Metals is a 44-page booklet available free to industrial-arts teachers from the Thomas C. Thompson Co. This attractive booklet describes and illustrates such topics as the preparation of enamels, the metals used for enameling, enameling tools and equipment, preparation of metal, application of enamel, creating designs, types of enameling techniques, firing techniques, and finishing. The booklet includes a glossary, a bibliography, and an index. For a cree copy, write to the Thomas C. Thompson Co., 1539 Deerfield Road, Highland Park, Illinois, mentioning SCHOOL SHOP; *or circle no. F13 on the business-reply card.*

Spray Painting Made Easy has been recently released by the DeVilbiss Company. The book covers the spray-painting subject from selection of equipment to tips for spray painters. There are chapters on job set-ups and how to finish various items which lend themselves to spray finishing. Send your order and 35c per copy to the DeVilbiss Co., 300 Phillips Ave., Toledo 1, Ohio, mentioning SCHOOL SHOP; *or circle no. F14 on the business reply card.*



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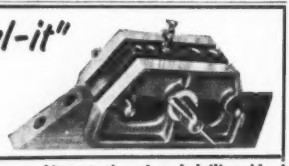

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Washington . . . . *from page 48*

What will happen in 1954, should the Administration insist on cutting vocational-education funds? Will the Democrats again move up their big guns—Rep. Barden of North Carolina and Senator George of Georgia—to defend the program? Will other Democrats join in the defense, as they did last summer?

No, history will not repeat itself, Washington observers predict freely. This time the Democrats will take a different position. "All right, if the Republicans want to scuttle vocational education, let 'em," the Democrats will say. "Then let 'em go home this election year and explain to the people what they did." As for the Democrats, the prediction runs, they will not be present when the roll is called.

Here is the game of politics at its sharpest—even at a point of ruthlessness. But, this *is* an election year; the Democrats *are* a minority; and the Republican majority *is* determined to save several million dollars at the expense of one of the weakest (in terms of appropriations) of federal programs. Once education gets caught in the swirl of politics there is no telling how seriously it may get hurt.

Meet the "Pacific Region" Program Specialist.—We have been wanting to talk to James W. Kelly for some time, but Mr. Kelly is no easy man to find in Washington. He is out of his office more than in—which is as it should be for a program specialist who "covers" that huge empire Washington blandly calls the Pacific region. Just how one Washington official can "cover" so vast a territory—11 great western states—is one of the mysteries and perhaps miracles of government.

When we finally found Mr. Kelly at his desk he had just returned from one of his trips and was still filled with the wonder of the exuberant West. "That's where the people are moving," he said. "That's where the newest and finest type school buildings are going up almost daily. That's where you see shining new equipment. And where above all you sense the vigor of an energetic people."

It is noteworthy that the West of 1954 should so impress a person who had known it since the first decade of the century. For young Kelly had lent his muscles and skill to the building of saw mills—the bigger kind—in the State of Washington. And he had been teaching mechanical drawing in Bellingham, Washington, before 1916. "I liked that first teaching job of mine," said Mr. Kelly, "but I realized I was teaching an industrial-arts course." These words revealed not so much his lack of relish for general education as his intense devotion to the practical. For it is his belief that trade and industrial education is more related to industry than it is to education. And it follows, therefore, in Mr Kelly's opinion, that trade and industrial courses and their teachers should be as close to employers and to labor as possible. "If you lose touch with these two elements, you don't conduct vocational education," he remarked.

It did not take long for the young industrial-arts teacher to find his true element. By 1919 he was transferred to teaching vocational classes; by 1926 he had become state supervisor for T & I in Washington; and by 1939 he became state director for vocational education. Throughout these years he stressed the necessity for keeping trade training close to the employer and the worker. The formal means of doing this, of course, is the advisory committee.

An advisory committee is no frill, Mr. Kelly believes. It is the source, the genesis of practical training. "After all, what is an advisory committee? It is a group made up of men who pay the wages and the people who do the work—employers and workers, labor and management. It is they who create the jobs and they who fill them. Vocational education is their handmaiden, their auxiliary. Without employers and without workers vocational education has small reason to exist."

The advisory committee, therefore, must be a "built-in" aspect of vocational education in war or peace, depression or times of prosperity, now or in the future.

Mention of war recalls the fact that Mr. Kelly served as deputy director of the War-Production Training Program from 1940 until the end of World War II. The achievements of the public vocational schools during those years are recorded in history, and the younger vocational teachers should not gloss over those chapters.

But, we asked, if future emergencies should come, will the vocational schools be able to play as important roles as they did in 1940-45? After all, the making of a modern war machine—whether jet bomber, radar screen, or atomic artillery—is a fantastically complex operation. Are the vocational schools anywhere near equipped to help in those tasks?

Mr. Kelly's reply was a definite yes. "If the public vocational schools of 1940, after years of depression, were able to rise to the need and help train millions

of war workers, the schools of the future will be able to do as well or better should war come. They are better equipped, better staffed than in 1940. Regardless of how complex modern industry becomes, there will be many special requirements and demands for workers with many levels of skills. And when a pin-pointed need develops, the public vocational school will be able to step in and fill it," Mr. Kelly said.

But Mr. Kelly's mind is not on his past achievements as a war-production training official. He would rather talk of the bustling, building Far West, where peacetime aircraft, the petroleum industry, the great waterpower electrical developments, the construction trades, and mechanized agriculture are calling for trained hands. The states and local communities of the "Pacific region" are mobilizing their resources to supply these skilled workers. And the vocational educators of those states are not overlooking the wisdom and experience of the one man the federal government is making available to them as program specialist. Washington gives them the affable, the able Jim Kelly.

News from the Associations.—A quick check with two or three of the organizations in which SCHOOL SHOP readers have an interest showed:

THE NATIONAL EDUCATION ASSOCIATION headquarters building has been attacked by squadrons of wreckers. It is part of an orderly plan to tear down the rickety NEA structures unit by unit and replace them with a $5,000,000 education center. The first unit of the new headquarters will be complete within 12 months, the entire center by 1957. That's the year the NEA will also celebrate its 100th birthday and hopes to have enroled nearly all of the 1,000,000 teachers in the United States. Plans for the centenary will be formulated this summer at the NEA's annual convention to be held in New York City. This meeting, incidentally, is the first in many years to be open to all NEA members (not only elected representatives) and you're invited, of course.

THE AMERICAN VOCATIONAL ASSOCIATION is busy with plans to present the case of vocational education before the Manion Commission in an effort to forestall too drastic a recommendation from that strongly-opinioned group. At the same time, the AVA is intensifying its efforts to tell members of Congress the full and true story of vocational education and its value to the nation.

In addition to these legislative activities, the AVA is also carrying a full load of professional research and publications activities. All but ready to come off the press is a booklet entitled "Definitions of Terms in Vocational and Practical-Arts Education." By September, the AVA should release a new "Handbook on Public Relations for Vocational Educators." We're told, too, that the *AV Journal* will salute the State of Delaware in March, Pennsylvania in April, and California in May. And long-range planning for conventions never seems to stop at AVA offices.

AND THE NATIONAL LUMBER MANUFACTURERS ASSOCIATION, a trade organization, has decided that the do-it-yourself enthusiast deserves special attention. And for a good reason: the man and youth making and building with their own hands have become important customers of lumber. In 1954, lumber dealers will do more prepackaging for them, cutting boards to shape, and supplying varieties of project drawings. ★

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Exit the Educator.—As this is being written, the federal Vocational Education Division has been without a chief for four months—and is still without one. And just now the Trade and Industrial Branch has lost its chief. Lawrence Borosage resigned after 11 months in Washington to join the faculty of Michigan State College.

The reasons for his resignation are personal. But this reporter cannot help but feel that the general weakening of the Office of Education, its adherence to personnel practices which give preference to veterans regardless of their ability, and the uncertain future of the federal-aid grants would be reasons enough for any ambitious young educator to leave Washington.

Nibbling Away the Funds.—And the future of the federal grants for vocational education are uncertain—dangerously so.

Some of the danger signals appeared long ago, but they keep increasing in intensity. The Council of State Governments is still busy "educating" state governors to the view that the Smith-Hughes and George-Barden Acts should be discontinued by 1955. The U.S. Chamber of Commerce is following up its June, 1953, pronouncement against federal grants with bales of literature suggesting that each state declare itself against such aid. And although the Manion Commission has not yet reported, it is an open secret in Washington that it plans to recommend cessation of aid to the states. So open is this secret that the U.S. Chamber of Commerce is urging the creation of "little Manion Commissions" in the states to work for the goal both the chamber and Mr. Clarence Manion appear to believe in. Some 25 such "little Manion Commissions" are said to be functioning already.

Whether these machinations will have effect on Congress is the big question of 1954. But within Congress, too, the foes of federal grants are at work. They may not act precipitously—remembering, as they must, the powerful support that gushed forth for vocational education during May, 1953, when it was proposed by the Administration to cut back vocational-education funds. Hence, the new strategy may be to nibble at the acts, weakening them bit by bit. And the first nibble might be made at the Smith-Hughes Act. Oh, no, not to repeal it. But to change it from an appropriations act (under which money *must* be allocated each year) to an authorization act (under which money may or may not be allocated, as it suits the mood of Congress).

Authorization acts can become meaningless. There are some authorization laws under which Congress has not voted a dollar for decades. The George-Barden Act is one of the mildest examples. It authorizes something like $29,000,000, but never once has this total sum been given. If the Smith-Hughes and the George-Barden Acts are combined to become a single authorization law, the first victory of those who would end federal grants will have been won.

Caught in the Swirl of Politics.—Another threat to the grants stems from the harsh political realities of 1954. To understand that threat, remember that when the Administration wanted to cut the vocational-education funds in May, 1953, many a Democrat joined with Republicans to save the day. In fact, if it hadn't been for the balance of votes supplied by the Democrats, the day might not have been saved.

(*Continued on page* 46)

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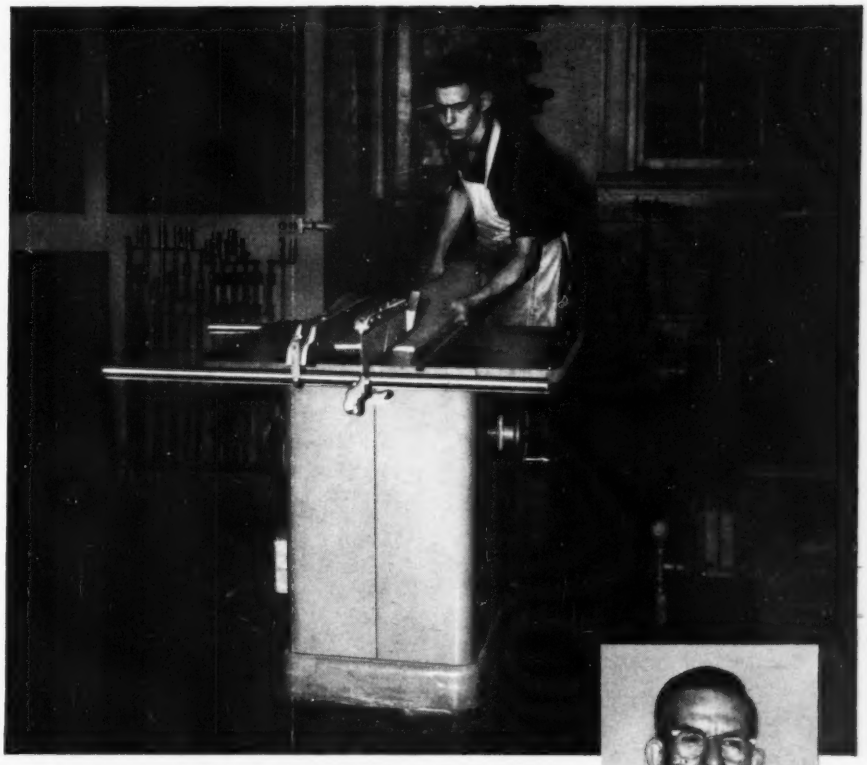

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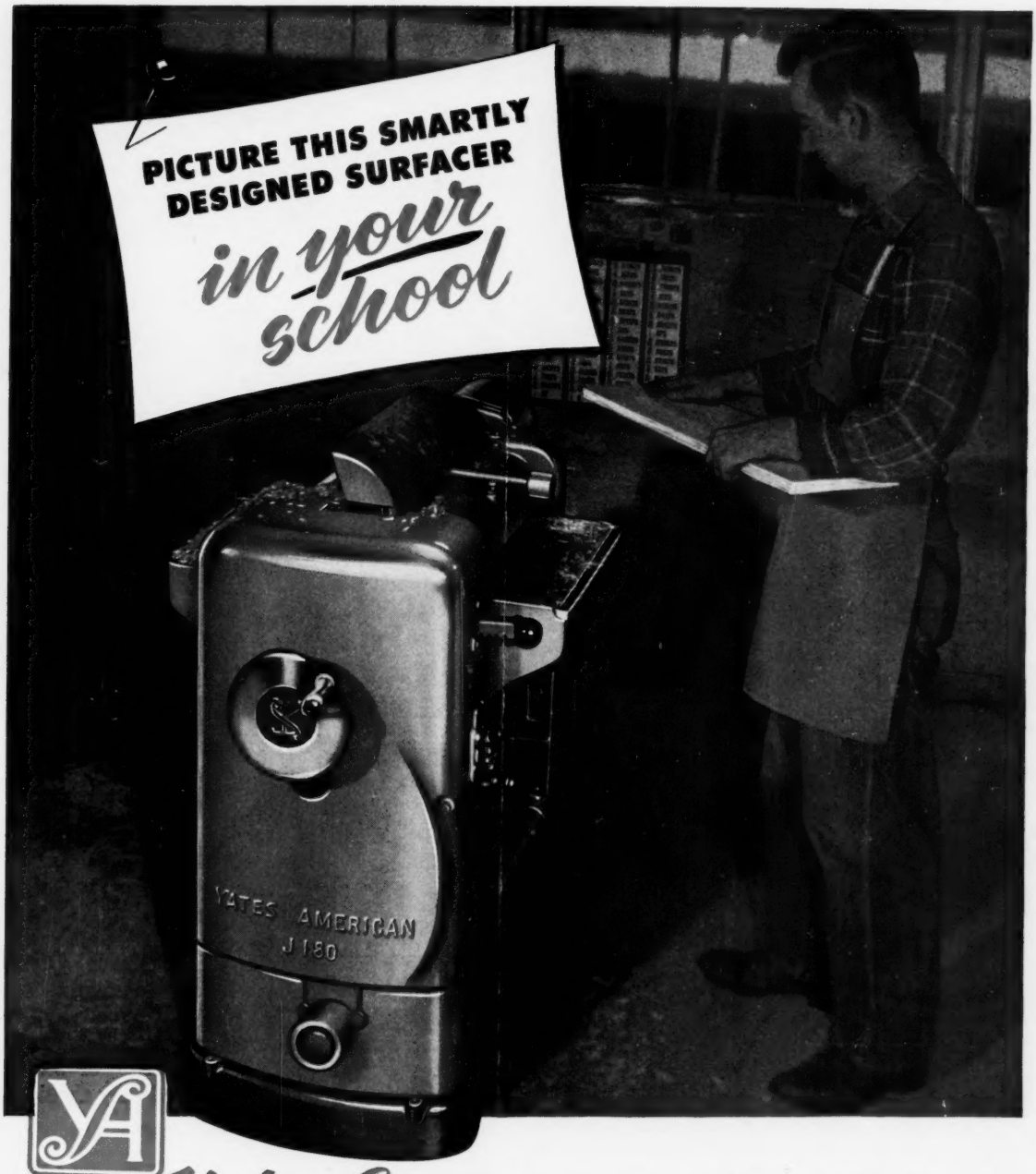

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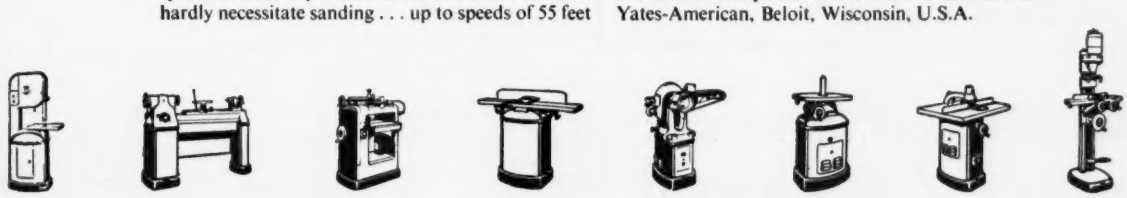
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